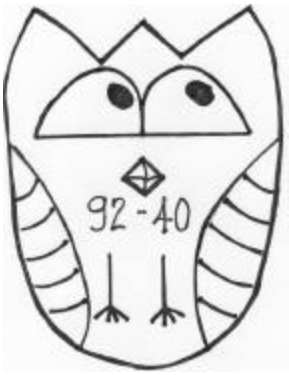
Camp Layout, Shelter, and Safety

Owls

92-40



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Choosing a camp site and camp layout

What to consider when choosing a camp site:

Here's a short version:

- Never trample on vegetation; choose a bare flat area or one previously used. Do not forget to follow the Principles of Leave No Trace.

- Camp close to a water source to make it easier to get water, but stay at least 200 feet away from water such as rivers and streams.

- Avoid a low spot that collects water after a rainfall, watch out for trees with weak branches

And here is what you find in the Scout Handbook

Environmental impact: Protect the environment by using established campsites whenever you can, or by camping on durable surfaces that will not be harmed by your presence. If fires are allowed, build them in existing fire rings. Try not to put fresh marks on the land.

Safety: Don't pitch your tents under dead trees or limbs that might fall in a storm. Stay out of gullies or other low spots that could flood. Choose a site away from lone trees, mountaintops, high ridges, and other likely targets of lightning. Camp some distance from game trails, especially in bear country.

Size: A site must be large enough for patrol members to pitch their tents and cook their meals. When hanging food to keep it away from animals, find the trees you need at least 200 feet (75 steps) away from where you will be sleeping.

Note: in some places there are limits on how many people may camp at one site. This means that the troop may have to break up into individual patrols for camping.

Water: Your patrol will require water for drinking, cooking, and cleanup – several gallons a day for each scout. Public water supplies are safest. Water taken from streams, rivers, or lakes must be purified before use. Camping in dry regions can be rewarding, though you might have to carry water to your site.

Terrain: Does the site slope gently for good drainage? Leaves, pine needles and other natural cover can keep the ground from getting muddy. An area open to the east and south will catch sunlight early in the day and perhaps be drier than slopes facing north.

Stoves and campfires: Where fires are permitted, look for a site with an existing fire ring and a good supply of dead twigs and fallen branches. If fires are not allowed, wood is scarce, or you don't want to spend much time preparing meals, use a lightweight camp stove to heat your water and cook your food.

Privacy: Respect the privacy of others. Trees, bushes, and some forms of terrain can screen your camp from trails and neighboring campsites. When other campers stay nearby, keep the noise down.

Permission: Get permission from owners before camping on private property. Check well ahead of time with land managers of public parks, forests, and reserves. They can issue any permits you need, and might suggest how you can make the most of your campout.

Terrains: The following terrains demand special care in campsite selection:

Meadows: Whenever possible, camp in the forest away from the meadows and the trees at their edge. Meadows can be important feeding grounds for animals.

Lakes and Streams: Bodies of water might be heavily used by wildlife. Pitch your tents at least two hundred feet (seventy-five steps) away from streams and lakes. That will allow the animals to reach the water and will reduce your impact on shorelines.

Alpine Areas: Winters in the high mountains are often long and harsh, leaving plants just a few warm months in which to grow. Camping on top of alpine vegetation can cause it serious harm. Make your high mountain camps in established campsites, on bare ground, or on snowfields.

Camp hazards to watch out for when choosing a camp site

Wind

Rockfall

Lightning

Flood

Bear habitat

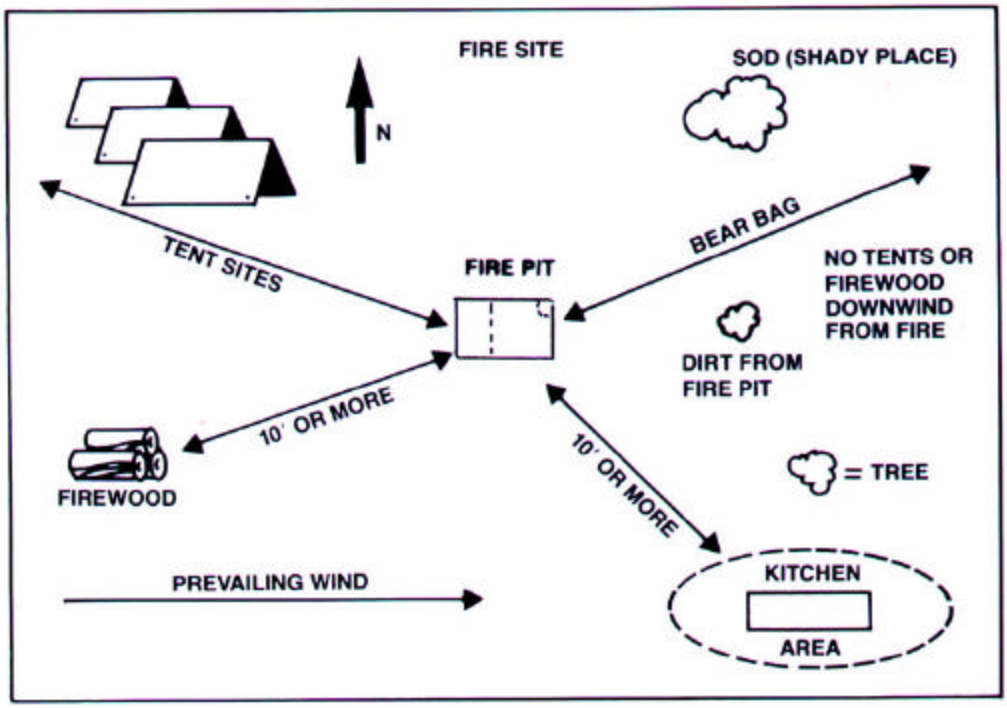
Insects (wasps, ants, ticks, mosquitoes, black flies)

Snake terrain and scorpion country

Avalanche hazard

Camp Layout

- Start with dining fly, which will serve as your kitchen area.
- In bear country, set up your tents upwind of and 30–40 yards away from kitchen and eating area
- Keep fire place area clean of combustible material, at least 10 feet away from wood shed and kitchen
- Check http://www.rei.com/reihtml/LEARN_SHARE/camp/campsite.html for additional information.



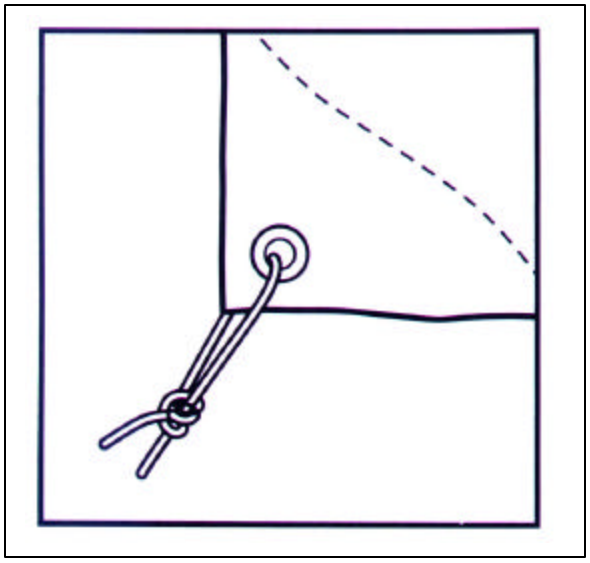
Shelter

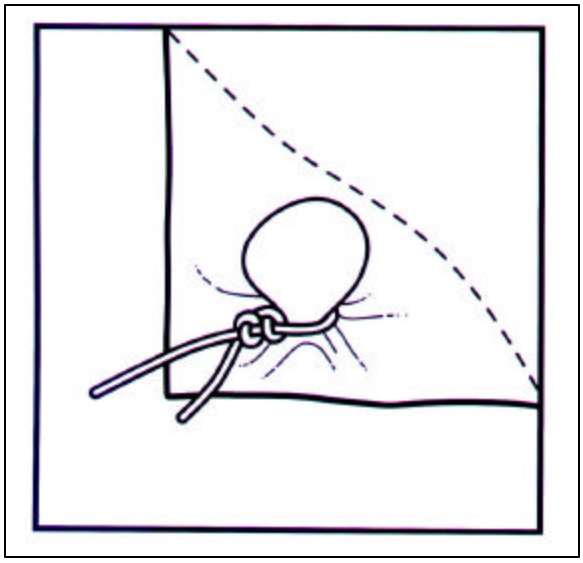
When you head into the wilderness, no matter how fine the weather, you must have a plan for shelter. The first requirement is for a roof to shed the rain. It will also keep the dew off your sleeping bag. It will also protect you from hot, bright sunlight and shelter you from the wind.

Types of shelters:

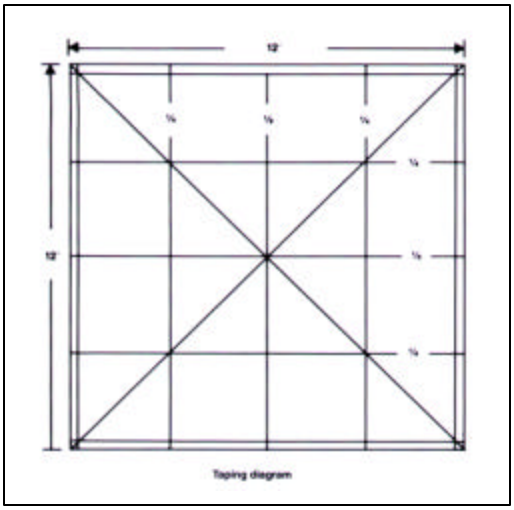
•The simplest possible roof is a poncho.

• A more versatile shelter is a tarp. A rectangular piece of water repellent cloth made from urethane coated nylon, plastic sheet or other suitable materials. Guys for pitching a tarp can be improvised from carried rope or cord. Attachment points can be grommets for bought or homemade tarps. You can improvise additional attachment points by bunching the fabric around a smooth stone and looping a noose of cord around it with two half hitches.





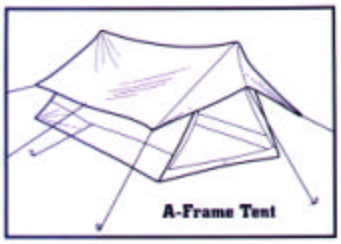
A tarp can be made of different materials. The least expensive is polyethylene plastic sheeting like that used by carpenters to cover stored lumber. The best thickness for a tarp is 4-mil or 6-mil, which means 4/1000 (6/1000) inch. A good size is 12 by 12 feet. The polyethylene sheet can be reinforced with ½ inch filament tape applied to the underside of the sheet according to the diagram in the box. A much stronger material is the glass-fiber-reinforced plastic tarp that is often used by roofers to cover up a house. It is typically blue and comes in may sizes. Because of its weight, this tarp is suitable only for long-term camping or camping near a vehicle. Light-weight and strong, but much more expensive, are tarps made of coated ripstop nylon that are available from outdoor outfitters in may sizes.

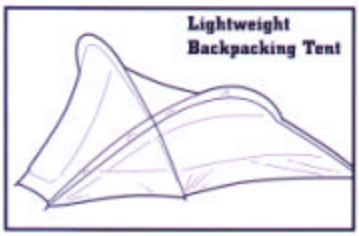


Taping diagram

• Solo shelters. Bivouacs or bivy sacs act as a rain proof shell for a single person. They cover you and your sleeping bag. Bug shelters made of mosquito netting protect only from insects and not water.

• A standard combination of the tent plus rain fly are the traditional double wall design. The tent section lets body moisture out and allows for ventilation. The rain fly keeps rain out and should be totally waterproof. Tents come in different styles: A-frame, dome and hybrids.





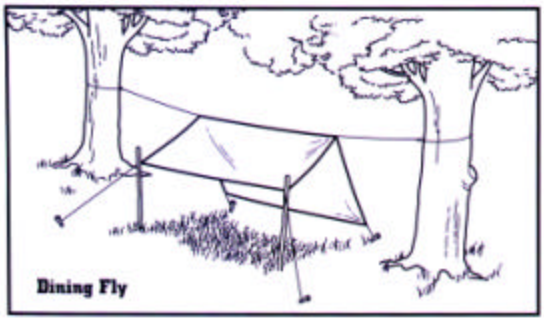
• The canvas tents are usually single wall construction and depend on the doors or flaps for ventilation. These tents are good for long-term camps, but are usually too heavy to carry.

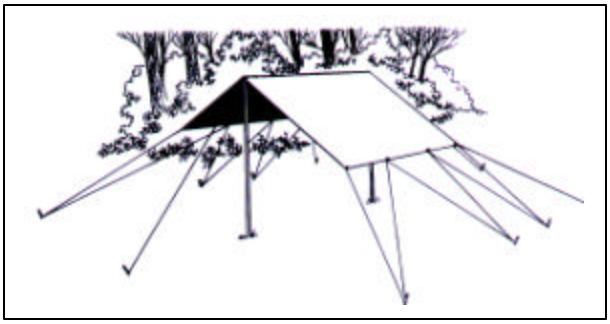
• Specially designed hammocks protect you from rain with a roof, insects with mosquito netting and allow you to sleep off the wet ground. These can be pitched between two trees.

High and tight with Tarps

The beauty of tarps whether homemade or purchased is that you can pitch them in a jiffy using traditional rigging techniques, your imagination and ingenuity. The examples below are just a few of many and work well with rectangular or parabolic shapes and require a few feet of guyline, several trees or rocks, and a little improvisation.

•A-frame Run cord between two trees and flip the tarp over it lengthwise. The lower the cord the better your weather protection. Guy the sides out to the ground at a gentle angle (30 to 45 degrees).





•Lean-to Lay tarp perpendicular to the wind and stake the windward side low to the ground. Guy opposite side at least four feet off the ground to trees.

•Burrito or tunnel Lay tarp perpendicular to the wind direction and unfurl your bedroll on the leeward half. Fold the windward half back over your bag and guy at an angle for suitable runoff. Give yourself sufficient clearance.

Choosing an Insulating Pad

•Backpacking. Foam sleeping pads are the lightest but not as durable. These have an egg crate type construction. Try Z-Rest, Ridgerest, or link Rest.

•Short-term camping or backpacking. Air self inflating sleeping pads are ideal. See Thermarest.

•Long-term camping. Try air mattresses or thick self inflating pads which weigh more but are harder to carry.

•Homemade pads for camping or backpacking. Pack two 30 gallon trash bags with enough dry pine straw or dead leaves to form a layer 3 to 4 inches thick. Place under sleeping bag for insulation and comfort.

Choosing a Sleeping Bag

•Choose a bag with a temperature rating at the low end of the temperatures you will be camping in.

•Down is lighter, warmer, more compressible and durable; costs more, less efficient when wet.

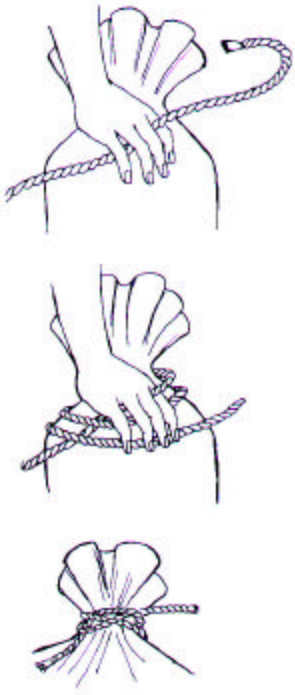
•Synthetic better when wet, quicker to dry, less expensive, not as warm and compressible.

Useful knots and hitches

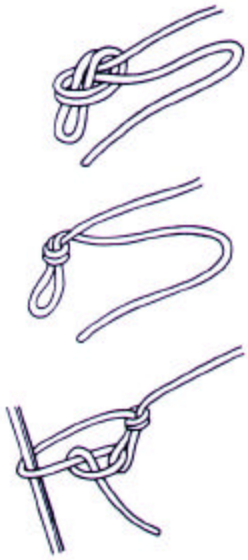
The following knots are very useful to set up and secure tents and tarps:

Use the Bowline to attach cords and guy lines to the grommets of tents and dining flies.

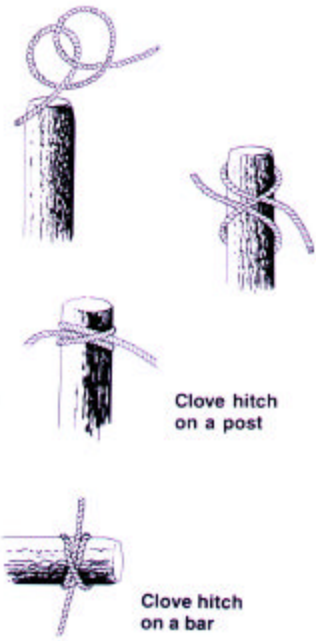
The millers knot gives you an extra tight wrap around a bear bag



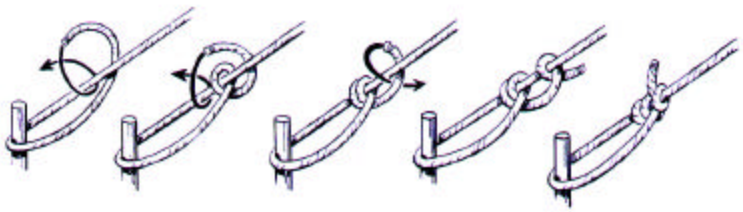
The truckers hitch gives you extra leverage for extra tension on a line. But careful: you might pull out a grommet or rip the tarp.



The clove hitch is widely used to tie a cord to a post or branch



The tautline hitch is used to tie lines to stakes. It permits one to adjust the length of the cord and thus the tension on the tent.



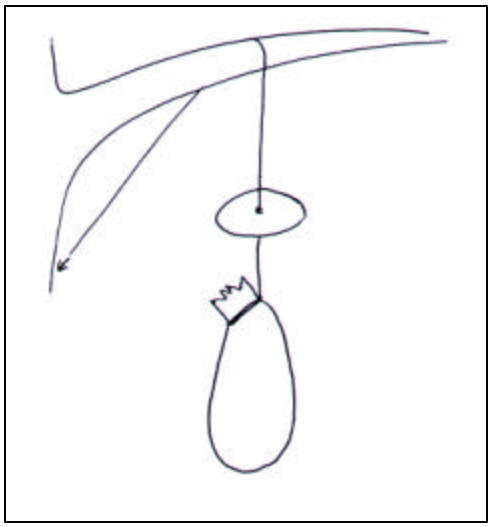
Food Storage

Food needs to be protected mainly from animals. If only dried and canned food is used, it is less critical to protect it from spoiling at high temperature.

Food needs to be protected from insects (ants, wasps), small mammals (mice, racoons) and large animals (bears). A good rule for all animals it to store the food in airtight containers so its scent will not attract animals. Freezer bags that can be opened/closed by a zipper mechanisms are ideally suited.

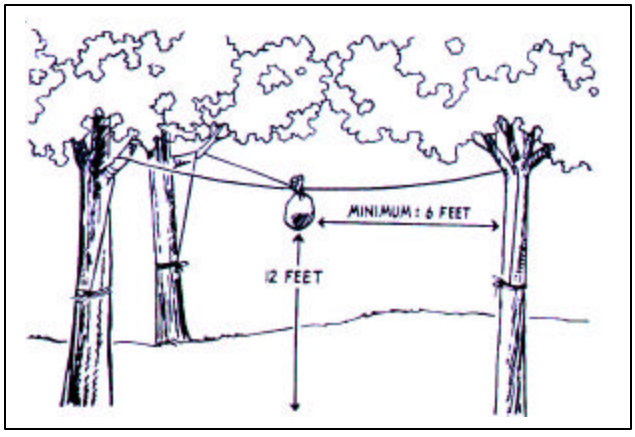
Protection against mice:

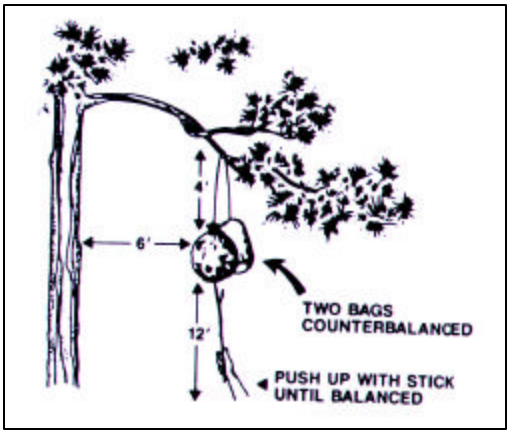
Mice can be a real nuisance in many places, for example in shelters and along camp sites of the Appalachian Trail. They can gnaw even through heavy bags and backpacks! To provide a barrier for the critters, feed a rope through a hole in the center of a tin can lid and secure the lid in place with a knot. Use this rope to suspend the food bag from a branch.



Protection against bears:

The “bear bag” is a heavy-duty plastic bag containing the food to be stored. Find a tree or group of trees that is sufficiently far from your tents. The bag can be suspended either from a rope between two or three trees, or from the strong branch of a single tree. It is possible to suspend two bags from the same line/branch by balancing them against each other.



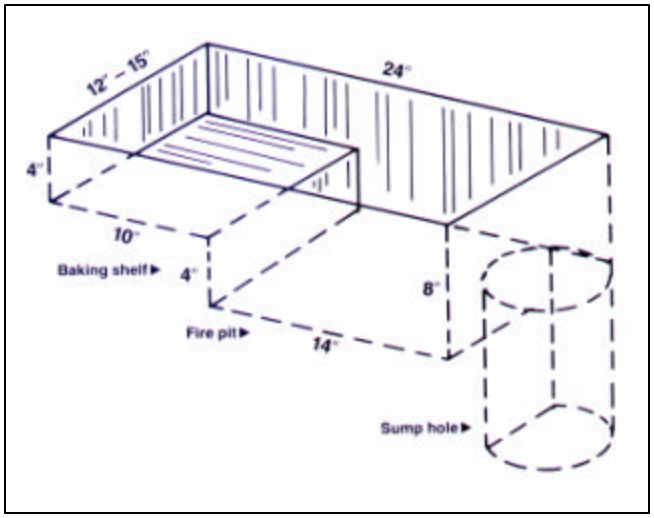


Fire place

Important Points:

- Choose a site that permits a fire away from combustible material.
- Ideally, use an already used fire site.
- Remove any combustible material from the site. This includes organic matter in the soil; the base of the fire has to be on mineral soil.
- A fire may never be left unattended. The fire has to be extinguished completely with sand or water and checked thoroughly for any remaining hot embers.
- Store your wood in a designated area (wood yard) along with the tools to cut the wood. This area needs to roped off and properly marked, and be accessible at only one place. Only ONE person at a time can be present in the wood yard! It may be useful to cover the wood with a tarp to keep it dry.

One way to reduce the impact of a campfire is to use a pit firelay. With a shovel or backpacker's trowel, cut a square of sod approximately 1 foot wide and 2 feet long. Work the tool beneath the sod and carefully remove it in several large pieces. Lay the pieces aside and, if the weather is dry, sprinkle them with water to refresh the plant life. Next, remove earth from the pit until you reach mineral soil, piling the extra dirt where it will not be trampled. Build your fire in the lower end of the pit and, when you are done with it, crush the remaining ashes and mix in the soil from the pit's edge. Then replace the sod, mounding it slightly so that over time it will settle into its original position.



Putting out the fire

Make sure that the fire is completely extinguished! Put out a fire by sprinkling it with plenty of water, stirring the embers to moisten them thoroughly Don't stop until the remains of your fire pass the cold-out test, which means you can safely run your hand through the extinguished coals and ashes.

After the fire is dead out, crush the ashes, mix them with the mineral soil of the firelay, and return the soil to the pit from which it was borrowed. In established, frequently used campsites, you can leave a neat pile of firewood for the next campers to use, but everywhere else you'll want to scatter your extra firewood over a wide area to help remove every signof your camp.

Finally, replace any ground cover you disturbed, and do whatever else you can to return the fire site to the condition in which you found it.

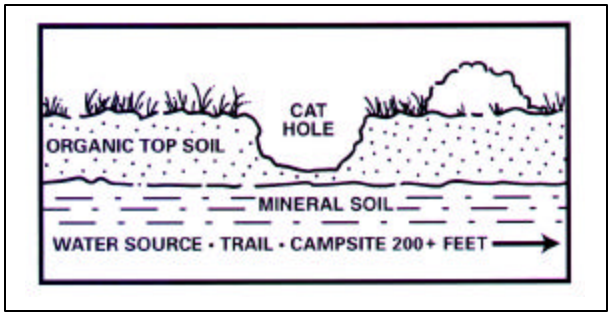
Sanitation

Getting rid of human waste outdoors requires special care. If the campground has rest rooms or outhouses, be sure to use them. If it doesn't, dig a cat hole or a latrine. Completely bury used toilet paper. Always wash your hands with soap and water when you are finished.

Cat hole

Find a private spot at least two hundred feet (seventy-five steps) from water, campsites, and trails. Dig a hole six to eight inches deep with your heel, a stick, or a shovel. Organisms in the top layers of earth will break down human waste.

Fill the cat hole with soil when you are finished, and replace any ground cover. Push a stick into the earth to warn others against digging in the same area.



Latrine

A patrol, troop, or other large group camping in the same place for two nights or more can help lessen its impact on the land by digging a single latrine rather than making dozens of cat holes. Check with a ranger or other local expert for guidance.

With a shovel, dig a shallow trench a foot wide and three to four feet long. Remove and save any ground cover. As with a cat hole, dig no deeper than the topsoil so that the waste will be buried in organic earth where it will turn into soil nutrients. Sprinkle a layer of dirt in the latrine after each use to keep away flies and hold down odors. Return all the soil to the latrine when you break camp, and put back the ground cover.

Principles of Leave No Trace:

1. Plan Ahead and Prepare

Proper planning ensures

- Low-risk adventures, because campers obtained information concerning geography and weather and prepare accordingly
- Properly located campsites, because campers allotted enough time to reach their destination.
- Appropriate camp fires and minimal trash, because of careful meal planning and food repackaging and proper equipment
- Comfortable and fun camping and hiking experiences, because the outing matches the skill level of the participant

2. Camp and Travel on Durable Surfaces.

Damage to lands occurs when visitors trample vegetation or communities of organisms beyond recovery. The resulting barren areas develop undesirable trails, camp sites, and soil erosion.

Concentrate activity or spread out?

- In high-use areas, campers should concentration their activities where vegetation is already absent. Minimize resource damage by using existing trails and selecting designated or existing campsites.
- In more remote, kless-traveled areas, campers should generally spread out. When hiking, take different paths to avoid creating new trails that cause erosion. When camping, disperse tents and cooking activities – and move camp daily to avoid creating permanent-looking campsites. Always choose the most durable surfaces available: rock, grave, dry grasses and snow.

3. Pack It In, Pack It Out

This simple yet effective saying motivates backcountry visitors to take their trash home with them. Minimize the need to pack out food scraps by carefully planning meals. Accept the challenge of packing everything out you bring.

Sanitation

Backcountry users create body waste and wastewater. That require proper disposal.

- **Wastewater**. Help prevent contamination of natural water sources: After straining food particles, properly dispose of dishwater by dispersing at least 200 feet (about 80-100 strides for a youth) from springs, streams, and lakes. If you must use soap, use biodegradable soap 200 feet or more away from any water source.
- **Human waste**. Proper human wste disposal helps prevent the spread of disease and exposure to others. Catholes 6 to 8 inches deep and 200 feet from water, trails, and campsites are often the easiest and most practical way to dispose of feces.

4. Leave What You Find

Minimize site alterations

Do not dig tent trenches or build lean-to's, tables or chairs. Never hammer nails into trees, hack at trees with hatchets or saws, or damage bark and roots by tying horses to trees for extended periods. Replace surface rocks or twigs that you cleared from the campsite. On high-impact sites, clean the area and dismantle inappropriate user-built facilities such as multiple fire rings and log seats and tables.

5. Minimize the Use of Campfires

Many areas have been degraded by the overuse of fires and the increasing demand for firewood.

- Lightweight stoves make low-impact camping possible by encouraging a shift away from fires. Stoves are fast, eliminate the need for firewood, and make cleanup easier. After dinner, enjoy a candle-lantern instead of a fire.
- If you build a fire, the most important consideration is the potential for resource damage. Whenever possible, use an existing campfire ring in a well-placed campsite. Choose not to have a fire in

areas where wood is scarce – at higher elevations, in heavily used areas with a limited wood supply, or in desert settings.

- True Leave No Trace fires are small. Use dead and downed wood no larger than an adult's wrist. When possible, burn all woos to ash and remove all unburned trash from the fire ring. If a site has two or more fire rings, you may dismantle all but one and scatter the materials in the surrounding area. Be certain all wood and campfire debris is "dead out."

6. Respect Wildlife

Quick movements and loud noises are stressful to animals. Considerate campers practice these safety methods:

- Observe wildlife from afar to avoid disturbing them.
- Give animals a wide berth, especially during breeding, nesting, and birthing season
- Store food securely and keep garbage and food scraps away from animals so they will no acquire bad habits. Help keep wildlife wild.

7. Respect Others

Thoughtful campers:

- Travel and camp in small groups (no more than the group size prescribed by land management.
- Leave their radios, tape players, and pets at home and keep the noise down.
- Select campsites away from other groups to help preserve their privacy and solitude.
- Always travel and camp quietly to avoid disturbing other visitors.
- Make sure the colors of their clothing and gear blend with the environment.
- Leave gates (open or closed) as found and respect private property.

When Wo came back to his tribe, all who saw his face knew that he had found the answer, and they gathered again about the council fire to hear. As Wo stood up and looked into the eager faces in the circle of the fire, he remembered that the Great Spirit had given him no message and for a moment he was dumb. Then the words of the Great Spirit came to him again. "When thy people and mine shall need to know my will, my spirit shall brood over thine and the words that thou shalt speak shall be my words." Looking into the eager faces of longing and questioning, his spirit moved within him and he spoke:

"I went, I sought, I found the Great Spirit who dwells in the earth as your spirits dwell in your bodies. It is from Him the spirit comes. We are His children. He cares for us more than a mother for the child on her breast, or the father for the son that is his pride. His love is like the air we breathe: it is about us; it is within us.

"The sun is the sign of His brightness, the sky of His greatness and mother-love and father-love, and the love of man and woman are the signs of His love. We are but His children; we cannot enter into the council of the Great Chief until we have been proved, but this is His will, that we love one another as He loves us; that we bury forever the hatchet of hate, that no man shall take what is not his own and the strong shall help the weak."

The chiefs did not wholly understand the words of Wo, but they took a hatchet and buried it by the fire saying, "Thus bury we hate between man and his brother," and they took an acorn and put it in the earth saying, "Thus plant we the love of the strong for the weak." And it became the custom of the tribe that the great council in the spring should bury the hatchet and plant the acorn. Every morning the tribe gathered to greet the rising sun, and with right hand raised and left upon their hearts prayed: "Great Spirit hear us; guide us to-day; make our wills Thy will, our ways Thy way."

And the tribe grew stronger and greater and wiser than all the other tribes — but that is another story.

Tent Making Made Easy*

By H. J. Holden

The accompanying sketches show a few of the many different tents which may be made from any available piece of cloth or canvas. The material need not be cut, nor its usefulness for other purposes impaired, except that rings or tapes are attached at various points as indicated. For each tent the sketches show a front elevation, with a ground plan, or a side view; also a view of the material laid flat, with dotted lines to indicate where creases or folds will occur. Models may be made from stiff paper and will prove as interesting to the kindergartner in geometry as to the old campaigner in camping. In most of the tents a ring for suspension is fastened at the centre of one side. This may be supported by a pole or hung by means

*Reprinted from *Recreation*, April, 1911, by permission of the Editor.

of a rope from any convenient fastening; both methods are shown in the sketches. Guy ropes are required for a few of the different models, but most of them are pegged down to the ground.

After making paper models, find a stack cover, a tarpaulin, a tent fly, an awning, or buy some wide cotton cloth, say 90-inch. All the shapes may be repeatedly made from the same piece of material, if the rings for changes are left attached. In Nos. 3, 4, 6, 7, 8, 9, 11, a portion of the canvas is not used and may be turned under to serve as sod-cloth, or rolled up out of the way. If your material is a large piece, more pegs and guy lines will be required than is indicated in the sketches. The suspension ring, 1½ inches or 2 inches in diameter, should be well fastened, with sufficient reinforcement to prevent tearing out; 1-inch rings fastened with liberal lengths of tape are large enough for the pegs and guy lines. Also reinforce along the lines of the strain from peg to pole.

Fig. 1.—A square of material hung by one corner, from any convenient support, in a manner to make a comfortable shelter; it will shed rain and reflect heat. This square makes a good fly or a good ground cloth for any of the tents.

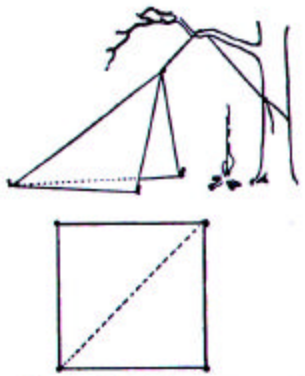


Fig. 1. Tent from a square of canvas. A 7 x 7 sheet is ample for a one-man shelter; 9 x 9 will house two

Fig. 2.— A rectangle equal to two squares. A shelter roomy and warm, with part of one side open toward the fire.

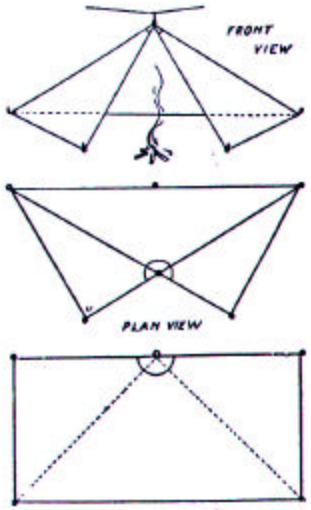


Fig. 2. Rectangle tent

Want to see how camping was in the early days of scouting?
This is from Chapter III of the 1911 BSA Scout Handbook.

Fig. 3.— Here the rectangle is folded to make a "lean-to" shelter, with the roof front suspended from a rope or from a horizontal pole by means of cords. The two corners not in use are folded under, making a partial ground cloth. A square open front is presented toward the camp fire.

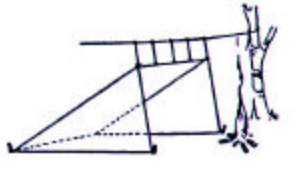


Fig. 3. Baker, or lean-to

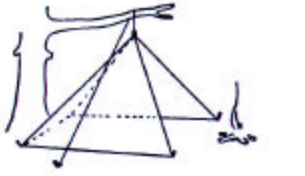
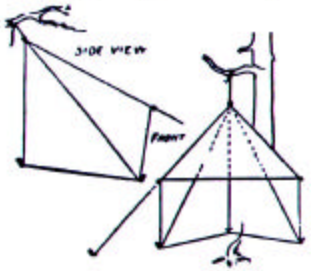
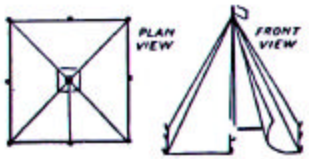


Fig. 4. Same plan as No. 3

Fig. 4.— Same in plan as No. 3, but has a triangular front and only one point of suspension.





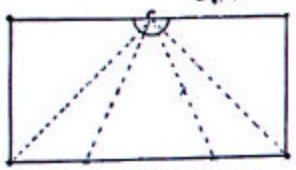


Fig. 5. The toque tent

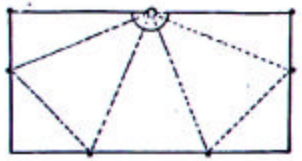
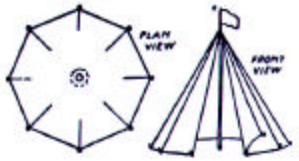


Fig. 6. Miner's tent

Fig 5.— Uses all the cloth, has a triangular ground plan, a square front opening, plenty of head room at the back and requires two or more guy lines. This shelter resembles a "toque."



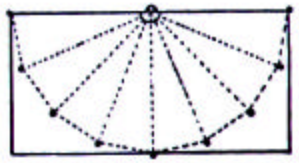
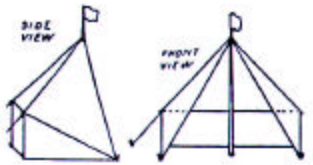


Fig. 7. Conical tent, or wigwam



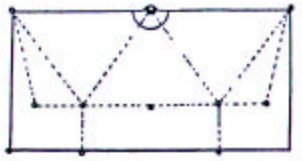


Fig. 8. So-called canoe tent. Requires three guy lines, and can be supported by a rope instead of a pole

Fig. 6.— Square or "miner's" tent. Two corners are turned under. This tent is enclosed on all sides, with a door in front.

Fig. 7.— Conical tent or "wigwam," entirely enclosed, with door in front. Two corners of the canvas are turned under.

Fig. 8.— Has a wall on one side and is called a "canoe tent" in some catalogues. It requires two or more guy lines and is shown with a pole support. The front has a triangular opening.

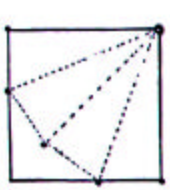


Fig. 9. Canoe tent with fly

Fig. 9.— A combination of No. 8, with No. 1 in use as an awning or fly. This sketch shows both tent and fly suspended by means of a rope. The "awning" may be swung around to any angle.

Fig. 10.— Combination of Nos. 1 and 2; they may be fastened together by a coarse seam or tied with tapes. The ground plan is an equal-sided triangle, with a door opening on one side, as shown. There is no waste cloth.

Fig. 11.— No. 10 changed to a conical shape and suspended as a canopy. The circular shape is secured by the use of small-size gas pipe or limber poles bent into a large hoop. Of course guy lines may be used, but would probably be in the way. Notice that a little more material for making a wall would transform the canopy into a "Sibley" tent.

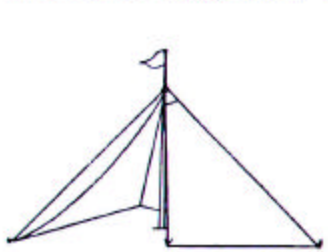
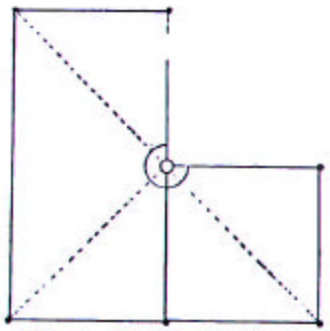


Fig. 10. Combination of Nos. 1 and 2



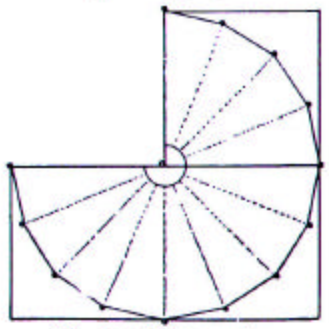


Fig. 11. Sibley awning

There are other shapes and combinations, but perhaps these sketches are enough in the line of suggestion.

The diagram Fig. 12 shows a method for laying out, on your cloth, the location of all the rings to make the tents and shelters. No dimensions are given and none is required. The diagram is good for any size. Most of the fastenings are found on radial lines, which are spaced to divide a semi-circle into eight equal

angles, 22½ degrees each; these intersect other construction lines and locate the necessary loops and rings. Figures are given at each ring which refer back to the sketch numbers.

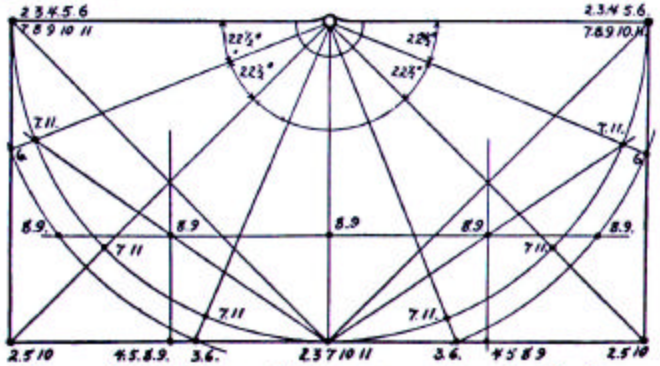


Fig. 12. Showing how ten different tents can be made with but one piece of canvas

Suppose the material at hand is the widest unbleached cotton cloth, 90 inches wide, 5 yards long, or 7½ feet by 15 feet. The accompanying table will give the dimensions for the various shapes from Fig. 1 to Fig. 11.

If in doubt about the location of rings on your canvas, suspend the tent by the centre ring and fasten the loops temporarily by means of safety pins, draw the tent into shape and shift the fastenings as required. The guy lines should have hooks or

TABLE OF DIMENSIONS, 90 IN. MATERIAL

Size	Area, Sq. Ft.	Height, Ft.	Remarks
1.....7½ ft. triangle	25	6½	One side open
2.....6½ x 15 ft.	65	6½	" " "
3.....6 x 7½ ft.	45	4½	" " "
4.....7½ x 8 ft.	60	5½	" " "
5.....7½ ft. triangle	25	7½	
6.....6½ x 6½ ft.	39	7	Enclosed
7.....7½ ft. diam.	44	6½	"
8.....5 x 7½ ft.	37½	6½	2½ ft. wall
9.....7½ x 8 ft.	60	6½	No. 8, with fly
10.....15 ft. triangle	97	6½	Enclosed
11.....11½ ft. circle	108	5	Canopy, no sides

snaps at one end for ready attachment and removal; the other end should be provided with the usual slides for "take up." The edge of the cloth where the large ring for suspension is fastened should be bound with tape or have a double hem, for it is the edge of the door in most of the tents shown.

Waterproofing a Tent

Dissolve half a pound of alum in two quarts of boiling water; then add two gallons of pure cold water. In this solution place the material and let it remain for a day. Dissolve a quarter of a pound of sugar of lead in two quarts boiling water, then add two gallons of cold water. Take the material from the alum solution, wring it lightly, place in the second solution and leave for five or six hours; then wring out again lightly and allow it to dry.

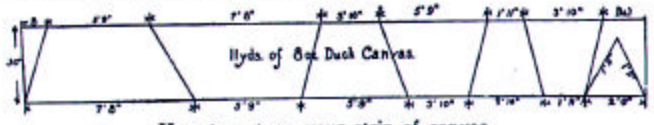
If you want to avoid trouble with a leaky tent, the following solution is a "sure cure;" Take a gallon or two gallons of turpentine and one or two cakes of paraffin, drug store size. Chip the paraffin fairly fine; dump it into the turpentine. Place the turpentine in a pail and set same in a larger pail or a tub of *hot water*. The hot water will heat the turpentine, and the turpentine will melt the paraffin. Stir thoroughly, and renew your supply of hot water if necessary. Then pile your tent into a tub and pour in the turpentine and paraffin mixture. Work the tent all over thoroughly with your hands, so that every fiber gets well saturated. You must work fast, however, as the paraffin begins to thicken as it cools; and work out of doors, in a breeze if possible, as the fumes of the turpentine will surely make you sick if you try it indoors. When you have the tent thoroughly saturated, hang it up to dry. It is not necessary to wring the tent out when you hang it up. Just let it drip. If you use too much paraffin the tent may look a little dirty after it dries, but it will be all right after you have used it once or twice.

An Open Outing Tent

By Warren H. Miller, Editor "Field and Stream."

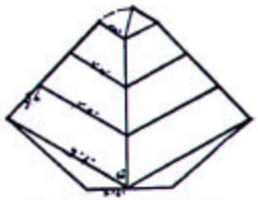
To make an open outing tent, get thirteen yards of 8 oz. duck canvas, which can be bought at any department store or dry goods store for seventeen or eighteen cents a yard. This makes your total expense $2.21 for your tent. Lay out the strip of canvas on the floor and cut one end square; measure up 8 inches along the edge and draw a line to the other corner.

From this corner lay off 7 ft. 8 in. along the edge and on the opposite side, lay off 5 ft. 9 in. beginning at the end of your 8-in. measurement. Now take a ruler and draw another diagonal across the canvas at the ends of these measurements and you have the first gore of your tent. Cut it across, turn the gore over, lay it down on the strip so as to measure off



How to cut up your strip of canvas

another one exactly like it. This is the corresponding gore for the other side of the tent. To make the second pair of gores, lay off 5 ft. 9 in. along one side of the remaining strip of canvas beginning at the pointed end, and 3 ft. 10 in. on the other side. Join these points with a diagonal and you have a second gore, a duplicate of which is then cut by using it as a



Forester tent pattern

Forester tent with hood

pattern, reversing and laying it down on the strip of canvas. To make the third gore, lay off 3 ft. 10 in, on one edge of your strip beginning at the point, and 1 ft. 11 in. on the other side. Draw a diagonal across and you have the third gore.

You have now used up all but two yards of your canvas, plus a little left-over piece of about two feet long. Out of this little left-over piece make a triangle 1 ft. 11 in. on the side, which will form the back triangle of your tent. Now pin your three gores together to make the side of your tent, just as in the illustrations, and pin the two sides together along the ridge. Then sew this tent up. Sew in the little back triangle and hem all around the edges. Leave a hole at the peak of the little triangle through which the ridge pole must go.

To set it up, cut three small saplings, one of which should be twelve feet long and the other two, ten feet long. Tie these two together at the ends making what the sailors call a "shears." Take the twelve-foot pole and run it down the ridge inside the tent, and out through the hole in the back. Now raise the ridge pole with one end stuck in the ground and the front end resting on the two shear poles and tie all three of them together. At the end of each seam along the hem you must work in a little eyelet hole for a short piece of twine to tie to the tent pegs. Stretch out the back triangle, pegging it down at the two corners

Forester tent with hood

on the ground, and then peg out each hole along the foot until the entire tent stretches out taut as in our illustrations. Three feet from the peak along the front edge you must have another eyelet hole with a little piece of twine and you tie this out to the shear pole on each side which gives the tent the peculiar gambrel roof which it has, and which has the advantage of giving you lots more room inside than the straight tent would. You now have what is known as the "open" forester tent.

If a thunder storm comes up with a driving rain it will surely rain in at the front unless you turn the tent around by moving the poles one at a time. If you don't want to do this you can make a hood for the front out of the two yards of canvas you have left. Simply draw a diagonal from one corner to the other of this

two-yard piece of duck and cut it down the diagonal, making two thin triangles which are sewed to the front edges of the open forester tent, making a hood of the shape shown in our picture. This prevents the rain beating in the opening of your tent but still lets the heat of your fire strike in and at the same time it keeps the heat in the tent as it will not flow out along the ridge pole as it does in the open type.

This tent weighs six pounds and packs into a little package fourteen inches long by seven inches wide by six inches thick, and can be carried as a shoulder strap or put in a back pack or any way you wish to take it. It will sleep three boys, or two men and a boy, very comfortably indeed. While it really does not need to be water-proofed, as it immediately shrinks tight after the first rain, you can water-proof it if you wish by making a solution of ten ounces of quick lime with four ounces of alum in ten quarts of water. Stir occasionally until the lime has slackened. Put the tent in another pail and pour the solution over it, letting it stand twelve hours. Take out and hang it on the clothes-line to dry. It will then be entirely water-proof.

To make a good night fire in front of the tent, drive two stout stakes three feet long in the ground about three feet from the mouth of the tent; pile four logs one on top of the other against these stakes or take a large flat stone and rest it against it. Make two log andirons for each side of the fire and build your fire in the space between them. It will give you a fine cheerful fire and all the heat will be reflected by the back logs into the tent, making it warm and cheerful. Inside you can put your browse bags stuffed with balsam browse; or pile up a mountain of dry leaves over which you can stretch your blankets. Pile all the duffle way back in the peak against the little back triangle where it will surely keep dry and will form a sort of back for your pillows. You will find the forester tent lighter and warmer than the ordinary lean-to, as it reflects the heat better. After a couple of weeks in it you will come home with your lungs so full of ozone that it will be impossible to sleep in an ordinary room without feeling smothered.

Canoeing, Rowing and Sailing*

The birch-bark canoe is the boat of the North American Indians, and our modern canvas canoes are made, with some

*Prepared with the coöperation of Mr. Arthur A. Carey, Scout Master, Boy Scout ship *Pioneer*; Mr. Carleton E. Sholl, Captain Lakanoo Boat Club Crew; Mr. Frederick K. Vreeland, Camp-Fire Club of America, and Mr. R. F. Tims, Vice-Commodore, American Canoe Association.

This is an excellent summary on safety from an earlier Showando book
(thanks, Beavers 92-39)

1) PERSONAL SAFETY
The first stage in Camp Safety is the individual Camper. And the main aspects of Personal Safety is having the right Personal Gear and having the right Camp Behavior.

A. PERSONAL GEAR. Make sure your Scouts are proper equipped for outdoor activities by having the right type of gear to prevent weather-related and site-related maladies.

A.1. Clothing. Dress According to the Type of terrain to be used and Weather and possible inclement weather as well. Proper clothing is the camper's first line of defense against the elements.

A.1.1. What to Wear. First of all, what is the weather like? This means loose fitting, light weight clothing for warm weather and Multiple layering for cold weather. Rain is a year round phenomena, so carly proper rain gear always. Element-shielding head gear is important in both warm weather and cold. Consult the Boy Scout Handbook's Warm and Cold Weather Clothing Checklists (pp 203/204) before heading out.
A. 1.2. Footwear: Make sure your Scouts have comfortable, broken-in footwear appropriate for the type of camping you are doing. Sneakers and moccasins are for good for extended camping in establish campsites. Sandals are to be worn only during water activities and should be avoided since they do not provide any top-side protection. For wilderness camping and backpacking, hiking boots or shoes with good Traction and water-resistance should be worn to better protect the main mode of transport— your feet!

No matter what type of footwear is worn, make sure that all footwear is comfortable and does not produce soreness or blisters. Make sure boots are "broken in" before worn on the trail. The best way to deal with blisters is to prevent them. Have hikers stop occasional, and remove their footgear to cool and rest. Change socks, even if it's only exchanging feet. Take care of your feet, and they will take care of you.

B. EQUIPMENT. One does not need a truckload of equipment for safe outdoor Activities. The basic set has been listed as the Scout Outdoor Essentials.
* Pocketknife
* Personal First Aid Kit
* Rain Gear
* Water Container
* Flashlight
* Matches/Fire Starter
* Map & Compass
* Sun Protection
* Trail Food
* Extra Clothing

Add equipment as per different activities, locations, and time of the year.

C BEHAVIOR: The way most Scouts and Scouters are injured is through negligent behavior, either intentional or ignorance. Make sure all Scouting participants know the proper behavior and have the required skills for the activities they participate in. Horseplay has NO Place in Scouting. Do not play with Fire or Camp Tools.

See Review "Guide to Safe Scouting" for rules on individual activities and travel.

II. SAFE ENVIRONMENT.

The Campsite is to be a place of enjoyment, so take care in making this home-away-from-home a safe place as well.

A) GROUND HAZARDS.

A.1. Tripping/Bumping Hazards. When going through camp, check for exposed roots, rocks, and logs. Remove what is moveable to a specific site, possible returning the items when you strike camp, although leaving a site safer is a good idea. For roots and immovable objects. indicate such items with florescent ribbon or paper strips, especially for visibility at night This also is usually for prevent head injuries from low-hanging objects. Remove warning indicators upon leaving.

A2. Poisonous Plants. Nothing can ruin an outing better then a bad rash from the big three; Poison Ivy, Poison Oak, and Poison Sumac. The best way to prevent such itchy situations is to Identify these plants and Avoid them. Be sure to carry medicinal treatments in case of accidentlaly poisoning. Crushed Jewel plant is a natural cure. Also, never Burn these plants as their toxins travel just as well through smoke as through touch.

Also, avoid sampling wild mushrooms, unless clearly identified as safe to eat by an expert.

B) HAZARDS FROM ABOVE:

B.1. Lightning. More people are killed each year by lightning then Bears, Bees, snakes, and nasty critters. When Lightning threatens, take cover immediately. Cease all water activities for water is a near perfect conductor. Avoid high, open places such as hills or mesas, and tall, lone trees.

B.2. Flooding. When it rains, seemingly dry gullies can instantly turn into raging torrents, even if it is not raining anywhere near you. Never travel or camp in gullies or canyons with no access out. Also, avoid camping in obvious floodplains or low lying areas, and pitch tents on ground that will drain away.

B.3. Falling objects. Gravity is a constant, so be sure nothing comes down from above to cause injury.

B.3.1. Trees. Always inspect nearby trees for dead limbs, either still attached or hanging. Avoid these trees, especially in high wind conditions. Never pitch a tent underneath such trees. Unless it's within an easy arm's reach, leave broken-off branches alone to fall naturally.

B.3.2. Rocks. When in rocky terrain, be on the look out for rockfalls by carefully observing the terrain. Avoid camping or even sitting underneath rock ledges or overhangs.

C) **ANIMAL HAZARDS**. The Outdoors does not belong just to people; it is the home to countless kinds of animals. Some of these denizens of the outdoors can, however, and will provide trouble for your activities.

C.1. Insects. The most troublesome camp pest are insects, most notably the flying, buzzing kind. Not only can insects pest cause painful stings, some can spread disease.

C. 1.1. Prevention. The best way to avoid injury from insects to keep them away. There is a wide variety of commercial repellents, in spray, cream, or liquid form. Also, insect netting should be used, and also worn, where insects are thick.

Also, know the habitats of dangerous insects. Poisonous Spider like the Black Widow inhabit cool, dry wooden places like wood piles and wooden latrines. Scorpions are found in desert regions, while Ticks and Chiggers live in wooded and grassy area

C.1.2. First Aid. Make sure your group know the First Aid Procedures for the various insect pests. Be sure to know if anyone in your party is allergic to insect stings. Have your group inspect themselves for ticks while getting dresses, and removed them in the prescribed maimer. In case of poisonous spider, get emergency medical attention right way.

C.2. Snakes. Most snakes are not a hazard to outdoor activities, but four poisonous types; Rattlesnakes, Water Moccasins, Copperheads, and Coral Snakes can turn a pleasant trip into a disaster.

C.2.1. Prevention. The best way to prevent bites from poisonous snakes is to avoid them altogether. The snake is merely defending itself from a large, unknown creature...you. Know what habitats they live in, and be on the lookout for them. Don't step or reach into unknown areas.
C.2.2. First Aid. All Scouts must know the proper first aid for snake bites, ignorance here can be more fatal as the bite. When in snake couniry, make sure there is a snake bite kit and the members know how to use it Proper identification of type of snake is necessary. Then, try to slow the snake venom by constricting blood flow from the affected limb and get the victim to medical attention right away.

3) Mammals. Although warm blooded animals can be cute, they are not playthings or pets. They are wild animals and should be treated as such. Enjoy them from a distance.
3.1. Small Mammals. The most serious danger from small mammals like Squirrels, Possums, Bats, Rodents, or even canines is Rabies. Do not play with any wild mammals, and if bitten, wash the wound and get the victim to immediate medical attention and consult local Animal Control.
3.2. Predators. There many tales of people being attacked by Bears, Cougars, or wolves, but the actual chances are lower then that being killed by a bee. But still, treat all predatory creatures as any other; namely from a distance.
3.2.1 Bears are by far the most troublesome, being intelligent, but lazy, scroungers of food. Prevent bear problems by securing your food and garbage, either locked or hung up, away from tents (storing or eating), and never, ever, ever feed bears. Avoid personal contact with Young Bears at all costs for Momma Bears will do anything to protect them.

If face to face with a bear, back away slowly, speaking or singly softly; if carrying food in a pack, drop the pack and move away. If charged by a bear, drop to the ground in a fetal position. Humans cannot outrun a bear in a sprint and it's got a headstart. For personal protection, commercial pepper sprays work far better then firearms.
3.2.2. Other Predators. Once again, prevent attacks from wild cats and canines by securing food, and by making noise when traveling. If face **to** face with a feline or canine predator, do not run; it will mere activate their hunting instincts.

III) FIRE SAFETY

In camp, fire provide warmth for our bodies, cook our food, and adds atmosphere for fellowship. But Fire can become a major danger if not used with care and respect.

A) SOLID FUEL FIRES. The traditional camp fuel of course, is Wood But since many camp areas today forbid the use of wood fires, Charcoal has rapidly more popular as solid fuel.

A.1. Wood Fuel. Nothing beats the ambiance of a wood fire when camping. But steps must be taken to ensure the comforting glow of a campfire does not turn into a raging blaze.
A.1.1. Storage of Wood Fuel. Upon gathering or cutting, store wood outside the Wood Yard in separate piles; divided into Tinder, Kindling And FueL Keep wood covered from the elements.
A.1.2. Use of Wood Fuel. Build the wood fire as per specific use; for cooking warming or fellowship. Always maintain 10-15 foot radius of clear ground around the fire, clear of anything flammable. Avoid using sedimentary rocks in your fire area as they tend **to** explode when heated. Keep handy containers of water or earth/sand nearby for extinguishing purposes Before lifting the fire. Use Tinder or purpose made fire starters to get it going and NEVER pour any flammable liquid onto a fire, whether lit or not.
While Lit, use log sticks, or long handled tools to manipulate the burning fuel, NOT your hand. If the fire become too hot for your purpose sprinkle a bit of extinguishing mater onto it. And most importantly, NEVER leave any fire unattended for ANY Reason. When extinguishing a fire, pour enough water and earth to make sure that it is COLD to the touch before leaving it.
A.2. Charcoal Fuel. Not only is Charcoal a safe fuel, it is quite capable of different applications. Ut can be used in an exiting firepit, a grill, Dutch Ovens, or even on sheets of aluminum foil on the ground.
A.2.1. Storage of Charcoal Fuel. Charcoal, being difficult to ignite readily, can be stored in the kitchen area of the campsite, but should be covered at all times.

A.2.2. Use of Charcoal Fuel. First of all, decide where it is to be used; if a firepit for grill is not available, charcoal can be used on the ground if placed on aluminum foil first Do not use liquid charcoal starter fuel, but instead use self-starting brands or use metal charcoal starters that use tinder such as pine needles, leaves, or paper. While using and when finished, treat a charcoal fire the same way as a wood fire.

B) **LIQUID FUELS**. The most common type of artificial camp fuel has been liquid petroleum products; either White Gas (Coleman Fuel), Kerosene, or even unleaded gasoline. lt is also the most hazardous.
B.1. Use of Liquid Fuel. The inherent nature of this type of fuel means it has to be Poured from the carrying container to the Stove. Utmost safety must be used when pouring, due to volatility of liquid fuel. Always use a funnel, clearly marked for Fuel use ONLY. Follow EVERY Instruction provided by the stove manufacturer.
B.2. Carrying and Storage of Liquid Fuel. When canying liquid fuel, ALWAYS keep it in a RED METAL Fuel Bottle; this is the international color code for liquid fuel and can prevent accidental ingestion of fuel. Make sure all seals are tight as not to have your pack drenched in fuel. When arriving at your site, stow ALL fuel in a separate, roped-off area at least 50 feet away from the main campsite, and especially tents.

C) **GAS FUELS**. Recently, liquid fuel has been supplanted by gaseous fuels such as Propane, Butane, or mixture of the two.
C.1. Use of Gas Fuel. These come in self-contained canisters and are thus easier and safer then liquid fuel However, there are some inherent dangers. First of all make sure the canister is the correct one for they specific stove you are using and follow the directions provided word for word. If a canister begins leaking or is punctured, get rid of it immediately! Place underwater to indicate when fuel is completely leaked out and dispose of properly.
C.2. Carrying, Storage, & Disposal of Gas Fuel. Carrying gas canisters is relatively safe, just avoid puncturing the device. Store all gas fuel containers just as you would liquid fuel in a rope-off "Fuel Yard". But the main difference between gas and liquid fuel is that unless the container is refillable, it is disposable. ALWAYS Pack Out Empty containers to disposed at home and NEVER dispose of one in a fire or by burying.

D) **The Most Important Rule Concerning Fire in Camp**: NEVER, NEVER, NEVER, NEVER, NEVER EVER Have ANY Sort of Fire inside or even near a tent. DO NOT Use stoves in tents and DO NOT Have Open Flames such as lanterns candles or burning coals around or in tents, not only is there Danger from the tent catching fire, but from DEADLY Carbon Monoxide poisoning.

IV) CONSUMABLES.

Food and Water is an important aspect of any outdoor activity for it is the essential material for our bodies. Make sure these valuable assets are used safely.

A) WATER. The most important consumable for any activity is Water. It is what cools, lubricates, and cleanses our bodies. Without **it,** the body overheats and shuts down, becoming a serious medical problem or even worse.
A.1. Hydration. On the average, a person needs 64 ounces of water a day, more if the weather is hot and dry and the activity strenuous. But dehydration can occur even on cold days, so make sure your Scout group has plenty of water to drink. Non- carbonated soft drinks and sport drinks are good if your Scouts a finicky about plain water, but these are often high in sugars and should not be the mainstay of hydration. Caffienated drinks should be avoided or at least reduced.
A.2. Purity. Make sure that All the water you drink is Safe Water. If it's not out of a tap or a bottle, assume that any water is Not Safe. Giardia, campylobacter, E. coli, hepatitis A and B are inhabitants of untreated water. Treat all unknown water sources with one or several of the following treatments:
1) Run the water through a certified Water Purifier, NOT just a filter. This will clean up microorganisms and chemical impurities.

2) Treat with Water Purification tablets and or Iodine. The drawbacks here are the time it takes to work and the taste.
3) Heat water to a Rolling Boil. This will kill 99% of microorganisms, but does not treat chemical impurities.
4) As a last resort, add a drop of chlorine bleach, if available. This should be done in emergency situations only.

Only in extreme survival situations should non-treated water be consumed, death by dehydration overrules intestinal damage. However, sea water should never be consumed, unless distilled via condensed steam.

B) FOOD. Nothing brings satisfaction faster then a delicious camp meal. However, in order to completely enjoy this, some safety precautions must be taken.
B.1. Safe Storage. Make sure your food stays well during both transport and in camp by protecting it from going bad or ending up as "Critter Chow".
B. 1.1. Freshness. If food goes bad, and is consumed, a severe intestinal problem will arise, not to mention being a waste of money. Check expiration dates of all store-bought and stored food items. Make sure perishable food items are kept cool in coolers or running water to prevent possible food poisoning. Make sure items to be stored long term are sealed from moisture and household pests. Also, keep food items away from fuel sources and cleaning supplies to prevent accidental ingestion.
B.1.2. Protection from Animals. Aside from the mess it makes, wild animals scrounging for an easy meal can cause severe safety problems; spreading dirt and disease, as well as the danger of attacking your group.Cover food being prepared from flies. Make sure all food is stowed in lockable containers or hung up overhead in a "bear bag", and NEVER Eat or Stow food in your tent, as the mere smell or even the residual smell of it will attract wild animals.
And be sure to clean up the kitchen area after cooking. Dirty dishes will attract all manner of pests, ranging from flies and ants to raccoons and bears.

B.2. Safe Cooking/Kitchen Safety. The tools we use to cook with in camp should be treated with as much respect as we should with those **at** home.
B.2.1. Utensil Safety. Make sure knives and cutting utensils are sharp, as dull blades will slip and cause injury. Always cut or chop on a sturdy work surface, and pay close attention to location of fingers. Use the right size of kitchen blade for the job. Handle all utensils carefully and try to avoid moving about with utensils in hand. When handling hot cook gear, always use Hot Pot Tongs or Insulated gloves.
B.2.2. Flame Safety. First of all, treat cooking flame as you would any other fire. If using a stove, read the directions and learn how to use it BEFORE heading out to camp NEVER Cook inside a tent! And remember, steam can burn one a lot quicker and worse then flames can. Use long reach tools to manipulate cooking fire and cookware around the cook fire.

V) TOOL SAFETY.

Various camp tools make for a better outdoor experience, but care and skill must be taken to ensure safe use of these tools.

A. WOOD YARD SAFETY. In order to safely use wood tools such as axes or saws, it is required of all Scouting camps to have a an area separated from the main camp to act as a "Wood Yard". This is where ALL cutting of wood is to take place.
A.1. Set-up of a Wood Yard. The bare minimum distance for a wood yard is the radius of one turning with their arm straight out and holding an axe handle in their hand. Keep all other people away a minimum of 10 feet away while working.
A.2. Wood Yard Etiquette. A Wood yard is **to** be a solitary place; with only one person inside working. Permission to enter must be gained from the person working inside. Never interrupt the person working inside the yard, wait until they are finished with a task before asking permission to enter.

B. PROPER USE OF WOOD TOOLS. The Right tool in the right hands with the right skill, wood tools can make hard jobs easy. But the wrong tool or the wrong skills can make even the right hands a target for injury.

B.1. Use the Right Tool. A hefty double-bladed axe may look impressive, but is useless for cutting tent pegs. The same goes for all wood tools. Use the Right Tool for whatever job you are doing. the size of an axe should match the size of the wood being chopped. Using a saw, one can cut more firewood faster then with an axe. Avoid large sheath-type knives as they are not as useful as multi-tooled pocket knives and can be more dangerous.

B.2. Carrying Tools. Not carrying or handling a camp tool the proper way can be just as dangerous as misusing it.

B.2.1. Knives. The safest way, therefore The ONLY Way, to carry or hand over a pocket knife is folded. Never carry or hand over a opened pocket or iinsheathed knife. When passing a knife, close it, passing with facing hands (ie do not cross your bodies), and have a declaration that the recipient has possession of the knife before letting go. NEVER Throw a Knife.

B.2.2. Axes and hatchets. When hand carrying an axe, carry it at your side with the blade facing AWAY from your body. When passing it to someone else, hand it over with the head down and facing away from both of you. again, have a declaration that the recipient has 'possession of the tool before letting go. When securing an axe to a pack, ALWAYS sheath it and have the blade facing Away from your body. Scouts DO NOT Throw Axes.

B.2.3. Saws. When carrying or stowing a saw, either fold it or sheath the blade (a split section garden hose works well). And again, carry or pack it with the blade AWAY from your body and get a declaration of possession before letting go when passing a saw.

B.3. Use of Tools.

B.3.l. Knives. First off, keep the blade of your knife sharp and clean, for a dull and rusty one is an accident waiting to happen. When cutting with a knife, cut away from your body. Don't strike the knife as a driving tool with any other item, and don't pry with the point, because the blade could break and cause injury.

B.3.2. Axes and hatchets. Make sure the axe blade is clean and sharp as dull edges tend to bounce off intended targets. Wear hand and eye protection and sturdy shoes/boots. Use a chopping block for splitting wood, and when de-Limbing a tree, keep the log between you and the axe.

With a hatchet, split small pieces wood by swinging the hatchet and the wood together down onto the chopping block.

B.3.3. Saws. The safest of wood tools, but saws still require proper, safe use! Wear work gloves while cutting. Before cutting set the wood to be sawed against a brace; a chopping block, makeshift sawhorse, or any study object. Never allow the blade to sink into the ground, and don't over exert yourself, let the teeth do the work. If the blade binds into the wood, do not force it anymore, gently extract it and begin cutting again.

After using any wood tool, CLEAN Up the Wood Yard and make sure all tool are put in their proper stowage place. If edges become dulled, either sharpen them or in the case of some saws, replace the blade. If Handles are broken, do not use until correctly replaced.

B.4. Stowage of Tools. Having used the necessary wood tools, one has to put them back in a safe and order fashion. If tools can be hung up on a line or other object, do so, and cover with a tarp or plastic sheet Axes and hatchets may be stowed by embedding the head into a sturdy log; if not, ALWAYS sheath sharp blade edges and fold saws into their storage positions

Remember, these are TOOLS, and NOT Playthings.

VI) SANITATION SAFETY.

Although not as dramatic as wood tools or fuel safety, proper Sanitation in camp will prevent far worse outdoor calamities.

A) **SAFE FOOD DISPOSAL**. After eating your delicious outdoor meals, you have to clean up afterwards. Not only is it unsightly and unsanitary, garbage and unwashed cookware attracts animals, insects, and germs.

A. 1. Solid Garbage. Most established campsites have garbage service, so there is no excuse not to bag all your garbage (and that left from the inconsiderate). In the case of wild areas, it is up to the traveler to pack out whatever garbage is produced. The vast majority of garbage produced is simply product packaging so reduce garbage to be packed out by repackaging food items before leaving home. Bag camp garbage as soon as it's generated, or else animals of all sorts show up for a free meal. Set aside a plastic bag just for trash, and pack out every scrap. In bear country, hang garbage with food and other odor-producers well out of reach, or it may be best to burn food scraps in a hot fire. Scorch any empty cans, then smash them flat for packing out. Always take a last look around when breaking camp to make sure no litter is left behind. Upon your return to civilization, think twice before unloading your garbage in the first available trash can. Many outposts and small towns do not have official landfills or waste hauling services. Take the garbage home with you to make sure it's disposed of properly.

B.1. Liquid Garbage. This is basically the left-over grease and washwater produced by campers. This type of waste is to be disposed of by pouring into a camp sump. This is simply a hole in stable, organic soil 1-2 feet deep with a screen to catch any solid waste matter. Make sure the sump is **at** least fifty feet from established campsites, trails, and other centers of human activity and at least two hundred feet (about seventy paces) from surface water.

B) **COOKING UTENSIL SAFETY**. Aside from improper handling (see above), the main way intestinal troubles develop at camp is due to unclean cookware.
B.1. Washing. First scrap off any uneaten food scraps into a trash bag. Wipe as clean as possible to preserve wash water. Scrub all cookware thoroughly with Hot, soapy water.
B.2. Rinse/Sterilize. Have a second container of near boiling water, with a capful of bleach or a sanitizing tablet. Rinse cookware thoroughly, holding pieces with hot pot tongs or a mesh dunking bag to prevent scalds. Leave no trace of soap, and lay out to air dry.

C) **BODY WASTE DISPOSAL**. More natural water sources are ruined by inadequate disposal of body wastes. Giardia, campylobacter, E. ccli, hepatitis A and B, and host of other nasty germs are spread through inadequate body waste disposal, not to mention noxious odors.

C.1. Portable Toilets. The easiest method of safe outdoor body waste disposal away from existing facilities is to carry a portable toilet. There are several on the market, ranging from those with chemical treatment systems **to** ones with plain plastic disposal bags. The main drawback is weight, but there are now portable solid waste disposal tubes for backpackers and hikers, so plan accordingly.

C.2. Temporary Latrines. If established or portable facilities are not available, a large group will have to make their own. Take extra care to choose a site ill-suited for any other use. Dense stands of trees or shrubbery are low-use areas and also offer privacy.
C.2.l. Large group latrine. This is for large groups (over 8), and for extended campsites (weekends and longer). Make sure the site is at least two hundred feet from established campsites, trails, and other centers of human activity. Locate in stable soils at least two hundred feet (about seventy paces) from surface water. Avoid places that show evidence of flooding carrying runoff, or groundwater seepage. Also avoid game runs and nesting or burrowing grounds.

Look for a site with an active layer of organic topsoil. The ground should be moist (but not saturated), fairly easy to dig in, and the organic layer should be at least six inches deep. When digging the hole, keep the sod lid intact. Set it aside, and pile all the dirt right next to the hole.

Construct a seating arrangement for a bit more comfort, and have a nearby wash station. After use, throw in a spadeful of dirt or two.
C.2.2. The "Cat Hole". This is a personal disposal area, a hole six to eight inches deep. Follow the above location criteria, but try to fill the entire hole with soil after use. For Urination, a hole is not necessary, but avoid animals trails or plant life, and try to use mineral soil or a patch of sand, if possible, and in a sunny spot for rapid evaporation.

C.3. Personal Sanitation. There is no point in maintaining good camp sanitation if one does not clean up themselves. Have a campsite clean-up station with soap and water. If this is not possible, carry a small bottle of “no-rinse” hand sanitizer lotion or cream, or even baby wipes to clean your hands after relieving yourself and defiantly before cooking and eating.

Sources:
Boy Scout Handbook, 1999 Edition
“Camping Made Easy” by Michael Rutter, 1997

This is Chapter 6 of the BSA Field Book:

Camping Know-How

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Perhaps you've seen a group of experienced backcountry travelers making camp. They chose an ideal site, and with smooth efficiency pitched their tents, prepared a cooking area, stowed their equipment and food, and took care of their sanitation needs. Before long, they probably had their supper cooked and their ground beds made, If a storm blew in, they were prepared for it, but they were just as ready to enjoy the blaze of stars in a clear night sky. The next morning they broke camp. After they had left, it was so clean, a clue that they had ever been there couldn't be found. They made the whole process look easy, but only because they had taken the time to learn the know-how of camping.

Camping with skill, grace, and ease is one of the most satisfying of outdoor adventures. Lord Baden-Powell realized that, and when he founded the Scouting movement in the early 1900's, he made camping its primary activity. He encouraged everyone to master the art of living outdoors, for he believed that a person able to spend days and nights in the forest would naturally have the confidence to meet the other challenges of life. He was right.

Camping without leaving at trace will draw upon may of your outdoor skills, as well as your knowledge of ecology, weather, and animal behavior. Most of all, you'll need to use common sense as you make decisions in the backcountry. The first of these will be selecting a place to camp.

CHOOSING A CAMPSITE

The right location is important not only for your safety and comfort, but also for protection of the land. In fact, choosing a campsite may have as much to do with the success of a night in the backcountry as anything else you do. While it isn't difficult, site selection does take a keen eye and an understanding of low-impact camping techniques.
In most cases, it's better to use established sites. There's no reason to scar the land with a new campsite if one already exists. Even so, don't assume any site is acceptable until you consider it in light of the following
guidelines.

General Location

A campsite facing the south will get more sunlight and generally will be drier than one on the north side of a hill or in the shade of mountains or cliffs. Cold, damp air tends to settle, causing the bottoms of valleys to be
cooler and more moist than locations a little higher. On the other hand, hilltops and sharp ridges can be very windy, and may become the targets of lightening strikes.

Size and Shape

A good campsite has plenty of space for your tents and enough room to conduct your activities. It should be usable as it is, so you won't need to do any digging or major rock removal to reshape the area. The less rearranging you do, the easier it will be to leave the site exactly as you found it.

Protection
Consider the direction of the wind and the direction from which storms may come. Is your campsite in the open or is it protected by a hill or a strand of trees? ls there a solitary tree nearby that may attract lighting? Don't camp under dead trees or trees with dead branches that could be blown down in a storm. In the mountains, avoid avalanche chutes.

Access to Water
You can't camp long without water. In some cases, that means hauling all you'll need from home. In the winter, you may be able to melt snow to replenish your water supply, but in other seasons you'll want to make your camp within walking distance of a stream, lake, or river. However, pitch your tents at least two hundred (200) feet from the edge of the water and out of the path of runoff. That way there is little chance you'll pollute the fresh water as you cook and wash, you'll be less likely to trample fragile shorelines and stream banks, and you're not apt to be caught by a rising flood.

Insects and Animals
Insects and other animals all have their favorite habitats. The best way to avoid mosquitoes and biting flies is to camp away from marshes, bogs, and pools of stagnant water. Breezes also discourage insects, so you might look for an elevated, open campsite. Don't forget to check around for beehives, homet nests, and ant mounds. Their inhabitants usually won't bother you as long as you leave them alone, but give them plenty of room. The same goes for most animals. Make your camps away from liars, dens, and obvious feeding grounds. In grizzly bear country, give a wide berth to areas with signs that bears are frequent visitors, and pitch your tent near plenty of climbable trees.
(For more on dealing with wild animals, see "Outdoor Safety.")

Ground Cover
Any vegetation covering a campsite will receive a lot of war and tear. Tents will smother it, sleepers will pack it down, and walkers will bruise it with the soles of their shoes. Some ground cover is tough enough to absorb the abuse, but much of it is not. Whenever you can, make your camp on naturally bare earth, gravelly soil, sand, or on ground covered with pine needles or leaves. While grassy meadows may seem inviting locations for camps, set up your tents in the trees at the edges of clearings rather than in the open. You'll have shade and protection from the wind, and meadow vegetation won't be harmed.

Alpine ground cover demands even more consideration. Because of harsh climatic conditions, plants at high altitude often require years to grow even a few inches, and the pressure of boots and tents may cause irreparable damage. Use established sites if you can, or search for a bit of bare soil on which to make your camp.

Drainage
While you'll want **a** campsite that is relatively flat, it should slope enough to allow rainwater to run off. On the other hand, you don't want to be in the path of natural drainage. Check above the site and be sure you're not in **a** dry streambed that could fill during a storm. With a proper location, you'll never have to ditch a tent.

Privacy
One of the pleasures of backcountry is being away from the crowds. Select campsites that are out of sight and sound of trails and other tents. That way you'll have your privacy while you respect the peace and qniet of other campers.

Beauty
The beauty of a spot often is what first attracts visitors to it. Being able to look out from a tent and see towering mountains, glistening lakes, or miles of canyon land or rolling prairie is part of what camping is all about. Find a campsite that gives you spectacular scenery, but use it only for it is appropriate for every other reason, too.

MAKING CAMP

Once you've picked a good site, you're ready to make camp. That usually means establishing places for cooking, sleeping, storing food and gear, and disposing of waste. A good way to start is be erecting your shelter.

Dining Fly
If your group is carrying a dining fly, put it up first. The fly will serve as your kitchen, help determine the layout of your camp, and give you a place to stow the rest of your gear while you pitch your tents.

A dining fly is a tarp that can be erected in a number of ways. One of the easiest is to string it between two trees with rope tied through two grommets. Stake down the back of the fly, then raise the front and tie the corners to other trees, hiking sticks, or to collapsible tents poles you've brought from home. Face the fly away from the wind. If weather conditions change, you can lower a corner or shift a stake to provide maximum deflection of wind, rain, and snow. When you use a firelay, place it ten feet in front of the fly - far enough away that sparks won't harm the fabric, yet close enough that cooks can step underneath during a downpour.

The dining area of a camp may be centrally located, but in bear country it's better to do your cooking and eating 30 or 40 yards down-wind from the tents in which you'll sleep. Bears attracted by the odors of food may limit their curiosity to the dinning area and leave the tents alone.

Tents
Select a tent site upwind from any firelays and clear it of stones and sticks that could poke through the floor. Don't disturb layers of leaves, pine needles, and humus; they'll improve drainage, soften your bed, and cushion the ground from the impact of your camp.

A tent usually is most stable when its back is aimed into the wind, but there may be reasons to situate it differently. Is there a scenic vista nearby? You might want the door of the tent to open in that direction. Will the first rays of the rising sun reach your camp? There's no better way to wake up than with the warmth of early morning light on your face. The sun also will quickly dry your tent and gear.

You can pitch most tents by spreading them over a waterproof ground cloth, staking out the corners, assembling and inserting the poles, then pulling the guy lines taught and pegging them down. Adjust the ropes and, if necessary, move the stakes until the tent floor and walls are free of wrinkles. Since rain can cause and cord, don't draw a tent drum-tight.

Ground Bed
The sounder you sleep at night in the backcountry, the better you'll feel during the day. For the best possible rest, make a comfortable ground bed.

Experienced campers know that what is underneath them at night is more important in keeping them warm and dry than as what's on top. Start with a plastic groundsheet or tent floor to protect your bed from moisture. Next, put down a layer of insulation. A foam pad is best for year-round use. You can also use layers of newspaper, clean straw, dry grass, or extra clothing. Air mattresses, which won't do much to keep you warm, are all right in the summer, but never cut boughs or strip tree branches to make a bed, there are plenty of better, less harmful alternatives.

Just as you wear layers of clothing that can be adjusted to meet changing weather conditions, you can set up your bedroll to match temperatures any time of the year. Start with a good, general-use sleeping bag designed to be effective at temperatures of 200F to 300F. On warm evenings you can leave the zipper open. If the night is cold, zip the bag to your chin, and if you need more warmth pull on your long underwear and a stocking hat, wool socks, and mittens. Further increase the insulation by lining the inside of your bag with a blanket or two, and on extremely cold nights you can wear insulated booties and put on a parka, or wrap your coat around your hips and things.

Sleeping bag hints
On dry days, unroll your sleeping bag early so it can fluff up as much as possible. In rainy weather, however, leave the bag in its stuff sack until bedtime so it won't absorb moisture from the air and become damp and clammy. When you're ready to tum in for the night, you can make a pillow by putting some extra clothing in a stuff bag or inside a sweater with the sleeves tied together. To keep your bag clean and yourself comfortable, don't sleep in the clothes you wore all day. Pajamas in the summer and long underwear or a sweatsuit in the winter make good night wear, and a fresh pair of socks will keep your feet warm. If the night is cold, pull a stocking hat down over your ears.

On treks lasting several nights, air your bedding every day the weather is fair. Shake out your bag and blankets and hang them awhile in the sun. Rainstorms have a way of sneaking up on empty campsites, so if you'll be away from your tent during the day put away your bedroll before you leave.

Food Storage
Whenever you camp, it's a wise practice between meals to gather your food into a bag and hang it from a tree. Although there may not be a bear with a thousand miles, ground squirrels, mice, raccoons, and dogs can create havoc with unprotected provisions, and if there are bears around, it's extremely important that you get all of the "smellables" out of your tent and pack before you bed down for the night.

While there is still plenty of daylight, find a tree with a sturdy horizontal branch about twenty feet above the ground. Tie one end of a fifty foot bear bag line around a rock and toss it over the branch, taking care not to let the stone strike anyone on its way down. Stash your provisions in a sturdy plastic trash bag, or in a burlap or mesh sack lined with plastic, twist it closed and tie it to one end of the line with a clove hitch. Pull the other end to raise the bag until it is beyond the reach of bears that might stand beneath it — at least twelve feet- or that may crawl up the tree trunk and out onto the branch, and secure the cord to a tree.

A second bear-bag technique requires two lines. Toss the end of one over a high branch and tie it to a tree trunk, then toss the other end over a branch of equal height on a tree some distance away. Pull the other cord tight and tie that end, too. Next, tie one end of the second line to the food bag, and throw the free end over the center of the line between trees. Pull the bag into the air and secure the line to the tree, suspending you bear bag far from the reach of prowling animals. Campers who frequently use this method find that it's easier to pull the bag aloft if they run the bear bag cord through a small pulley attached to the center of the cord strung between trees.

Bears accustomed to raiding campsites may be smart enough to drop food bags by clawing cords tied to trees. To prevent that from happening, divide your provisions equally into two bags. Using a bear rope tossed over a branch, raise one bag in the usual way, then tie the free end of the cord to the second bag. Lift it overhead and use a stick or hiking staff to shove it out of reach. The bags will counterbalance one another, and your food will be safe. To retrieve the bags, use the stick to push one bag even higher, causing the other to come down within your grasp.

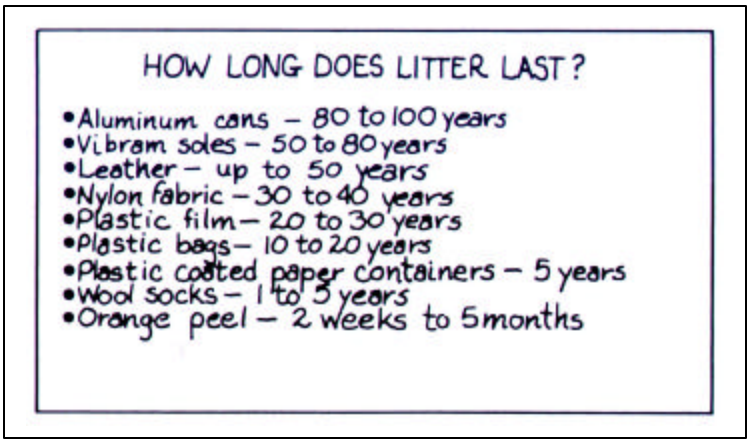
Personal Sanitation

Complete your campsite preparations by making arrangements for waste disposal. If your group is small (no more than five or six) and staying only a night or two at a site, you can use a cathole to get rid of human waste. A cathole is efficient because the top layer of soil in most areas is full of microorganisms that decompose the remains of plants and animals.

Make each cathole at least two hundred feet from any campsite, trail, or water source, and choose a location that isn't likely to be visited by others. With the heel of your boot or a small trowel, dog a hole about six inches deep, but no deeper than the rich organic topsoil. After use, cover the hole completely, and in a few days the microorganisms will break down the waste.

When a larger group goes camping, there are simply too many people to use catholes efficiently, and if there are no public restrooms, you'll need to rely on a latrine. Find a secluded site at least 200 feet from water, trails, and campsites, and dig a trench several feet long, 6 inches wide, and about 6

inches deep. Leave the shovel nearby, and as each Scout uses the latrine, he should sprinkle a little soil into the trench to prevent flies from infesting the waste. If your latrine needs more capacity, dig it longer, not deeper. The microorganisms are only in the top layer of earth. Don't put anything into a latrine or cathole except human waste. Animals will dg up buried garbage and scatter it around the forest, and the microorganism can't do much to break down plastic, glass, metal, paper, or cardboard. Take all your trash home with you. If you packed it in, you can pack it out.


HOW LONG DOES LITTER LAST?
•Aluminum cans – 80 to 100 years
•Vibram soles – 50 to 80 years
•Leather – up to 50 years
•Nylon fabric – 30 to 40 years
•Plastic film – 20 to 30 years
•Plastic bags – 10 to 20 years
•Plastic coated paper containers – 5 years
•Wool socks – 1 to 5 years
•Orange peel – 2 weeks to 5 months

Personal Cleanliness
Backcountry cleanliness is important for your health and happiness. While you probably won't wash as frequently as you do at home, you can take a good bath with just a couple of pots of water. Carry them at least two hundred feet from springs, lakes, or streams, and give yourself a thorough scrubbing with a washcloth, biodegradable soap, and the water in one pot. Use the second pot for rinsing by dipping it out with a cup. In the summer, you can let the water warm in the sun before you use it, while chilly weather may call for heating it over a stove or campfire.

Drinking Water
Purify all water you get in the wild, no matter how clean it appears to be. Some bacteria thrive in remote mountain lakes, and there is no way of knowing what might have fallen into the water upstream.

BREAKING CAMP

When it's time to go home, there's only one rule governing your departure from a campsite:

Leave no sign you were ever there.

Break camp by reversing the order of the tasks with which you made it. If you built an open fire, be sure it is cold-out, dismantle the firelay, properly dispose of ashes and mineral soil, and scatter any extra firewood. If you dug a latrine, fill it completely, and neatly replace any sod you removed.

Next, pack your personal and group gear and, if the weather is bad, stow your pack under the dining fly or in the shelter of a large tree. Brush debris out of your tent, then take it down, roll it tightly, and strap it to your pack. Be sure you've got all the stakes and pole sections. Finally, strike the dining fly and spend a few minutes inspecting the area, picking up every bit of litter. Don't leave until the site is as clean and natural as it was when you arrived.

When you get home
After the trek is over, there are still a few things to do. Before you get on with other activities, take time to unpack and put away your gear. Air out your sleeping bag, pad, and blankets. Wash your

eating kit and store any unspoiled, leftover food. Clean your share of the group equipment, and retum it to storage. If your tent and dining fly are wet, hang them in a basement, a garage, or on a clothesline in the sun until they are dry before you roll and store them. Never put away gear that wet; mildew can rot and ruin even the finest of fabrics.

KEEP A LOGBOOK

As Lewis and Clark explored the vast wilderness that would one day become the western United States, they wrote in their joumals the locations of all their encampments, the number of miles they had traveled, and the things they had seen and done. Their logbooks became an invaluable record of their explorations.

You'll want to keep a record of your adventures, too. A wirebound notebook makes a fine log, and so do hardbound blank journals. Within a day or two of every trip, while the memory of the outing is still fresh in your mind, write down the dates of the trek, the names of the participants, where you went, and a summary of the highlights. Soon you'll have a logbook as important to you as Lewis and Clark's was to them.

FOLLOW UP

Even the best campers can improve their skills. After each adventure, get together with your buddies and discuss what was good about the trip and what could have been better. Where the meals as easy to prepare and as tasty as you had hoped? Did everyone stay dry? Did you take the right equipment and supplies? Was the campsite a good one, and were you able to leave it unmarred? Leam from the successes of each trek as well as the mistakes, and before long you will have mastered the know-how of camping.

This is Chapter 7 of the BSA Field Book:

Stoves and Fires

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There was a time when backcountry travelers could build fires wherever they wished. The skill with which they could kindle a blaze was a mark of their woodland expertise, and the fires they created became the centers of their camp activities. They cooked over them, dried wet clothing next to them, warmed themselves near them, and gazed into them long into the night. Few could imagine an evening without a fire, and even so thoughtful a wilderness advocate as Henry David Thoreau saw little wrong with building a bonfire in the Maine woods and leaving the embers glowing as he traveled on.

We live in an age different from Thoreau's. In his day, most of America was wild; today, the opposite is true. Intelligent campers realize that much of the remaining backcountry cannot withstand the impact of unwise camping practices. Of course, there are times when a fire is fine and even desirable, but if it is misused, a campfire can be the most damaging of intrusions on unspoiled land. Fortunately, lightweight stoves provide an ecologically sound alternative to open fires, and the mark of experienced campers has become not just the ability to build wood fires, but also the wisdom to know when not to light one. By considering the advantages and disadvantages of campfires and stoves and then using the heat source most appropriate for a given situation, you'll find that your own outings be enhanced rather than inhibited.

CAMPING STOVE

Advantages
- A stove will not scar the earth.
- It burns nothing native to the backcountry
- It operates reliably under adverse conditions.
- It creates steady heat that wofft blacken rocks or cooking gear.
- It is quick and convenient enough to heat a cup of soup at midday.
- It makes travelers self-sufficient, able to camp high on a rocky mountain, deep in a treeless desert, or in the drifts of a snowy forest.

Disadvantages
- A stove requires the handling of flammable liquid or gaseous fuels.
- It must be carried and kept in good working condition.

CHOOSING A STOVE

Kerosene
The simplicity and reliability of kerosene stoves makes them the choice of many extended mountaineering expeditions. Large kerosene stoves are available for use by groups of more than two or three campers.

White Gas
White gas is a highly distilled fuel used in the majority of North American backpacking stoves. Before being lit, some white gas stoves must be preheated. Others are equipped with pumps to pressurize their fuel tanks, a real advantage in cold weather. Keep any open fuel containers far away from open flames, and always let stoves cool completely before bringing white gas near them.

Butane/Propane

Other Fuels
Chemical pellets seldom produce enough sustained heat for real cooking, but ey do make good fire starters and can be used to heat small amounts of water for hot drinks.

PACKING AND USING STOVES AND FUEL

On any but the shortest trips, you'll need more fuel than your stove will hold. Check the manufacturer's guidelines to determine how much fuel you should carry. In cold weather, take half again as much as in warm conditions, and even more if you intend to melt snow for water.

Propane and butane cartridges are ready to go just as they are, while liquid fuels must be stored in special fuel bottles. Use high-quality metal bottles made especially for carrying petroleum fuels, and see that they have tight-fitting lids with gaskets that will prevent leakage. Choose red bottles, or mark them with several strips of bright red embossed plastic tape to prevent any possibility of confusing them with water bottles in either daylight or darkness. Keep fumes from spoiling your provisions by stowing fuel containers and stoves in plastic bags, then storing them in the outside pockets of your pack. You can protect a stove further by rolling it in a piece of foam and securing the bundle with rubber bands.

When you're ready to use your stove, place it on a flat, stable surface that will not be harmed by heat. A smooth rock or a patch of bare ground is all you need. While the stove is still cold, attach a cylinder or fill the tank with fuel. Pouring liquid fuels is easy if you use a small plastic funnel or a special fuel bottle cap with a spout built into it. Store extra fuel far away from the cooking area, then follow the manufacturer's stove lighting directions exactly. For quick reference, you may want to protect the instruction sheet with a plastic bag or a clear laminate and keep it with the stove. For winter camping, carry along a 6-inch square of plywood. You'll have a good platform for your stove that will prevent snow and cold ground from drawing heat away from the pressurized fuel tank.

Practice using your stove before you leave home. Every stove exhibits its own peculiar traits, and you don't want to be surprised by the strange habits of your stove when it is dark and sleeting and all you really want is a cup of hot cocoa. Furthermore, if you're well acquainted with your stove, you'll know what spare parts to include in your repair kit and how to use them should the stove break down.

Finally, remember that a stove is a remarkable tool, but one whose temper flares if it is mishandled. Never take a stove for granted; it demands all the respect you can give it. In addition to the guidelines discussed above, keep the following safety rules in mind.

OPEN FIRES

Advantages
- An open fire creates heat suitable for cooking food, drying gear, and warming chilly campers.
- It requires no special equipment.
- It allows a cook to bake in dutch ovens and reflector ovens, and to broil foods on grills.
- It provides a psychological lift on cold, stormy days, and it serves as the focus of fellowship and contemplation.

Disadvantages
- A firelay is unsightly and stains rocks with soot.
- Fire poses a potential hazard to the surrounding forest.
- It requires an adequate supply of firewood or charcoal.
- It can be difficult to start and maintain in foul weather.
- In any weather, it takes time to build and feed.
- It blackens pots and pans.

- It is illegal in many parks, forests, and wilderness areas and may be allowed only by permit, especially during periods of drought.

CAMPFIRES

Under the right conditions, there is nothing as pleasant as a campfire. Fire comforts us. It draws us toward its warmth and light. It makes us feel more secure. Perhaps there is something basic in our fascination with flames, a flashback to a time when a fire could mean the difference between life and death.

While the ability to kindle a blaze may in rare instances save a life even today, campfires usually are built by choice rather than out of necessity. If the ground cover is fragile, if the forest is dry, if the wind is strong, if wood is scarce, or if there is a chance of creating a new scar on the land, responsible campers will forego open fires and use stoves. However, when the conditions are right and the proper permits have been obtained, they can make a fire just big enough for their needs and then dismantle it so well there won't be the least clue it ever existed.

FIRELAY

The best firelays are permanent ones found in established campsites. These may be stone fireplaces, metal fire rings, or raised grills. If your campsite has such a firelay, use it. There is no need to make a new scar on the land by burning firewood elsewhere.

When you camp away from developed sites, you'll need to build your own firelay. Essential to the process is a good supply of **mineral soil** — silt**,** clay, and sand that does not contain organic matter that can be harmed by heat. You'll find mineral soil along stream beds and gulleys, on beaches, and in the bottoms of latrine holes.

Choose a site for your firelay that is in the open, away from overhanging tree branches that could ignite and boulders that could be stained with soot. Clear a 10-foot circle of any burnable material, setting aside twigs, pine needles, and dry grass so you can put them back in place when you ave finished with your fire; then build a firelay appropriate to the nature of the ground cover.

Pit Firelay One way to reduce the impact of a campfire is to use a pit firelay With a shovel or backpacker's trowel, cut a square of sod approximately 1 foot wide and 2 feet long. Work the tool beneath the sod and carefully remove it in several large pieces. Lay the pieces aside and, if the weather is dry, sprinkie them with water to refresh the plant life. Next, remove earth from the pit until you reach mineral soil, piling the extra dirt where it will not be trampled. Build your fire in the lower end of the pit and, when you are done with it, crush the remaining ashes and mix in the soil from the pit's edge. Then replace the sod, mounding it slightly so that over time it will settle into its original position.

Bare Ground Firelay When the ground is bare, haul enough mineral soil to the center of the cleared circle to make an earthen pad about 2 feet long, 2 feet wide, and 3 inches thick. Kindle the fire ontop of the pad, and the mineral soil will protect the ground from the heat. After you have properly extinguished the blaze and disposed of unburned wood, crush the remaining ashes, mix them with the mineral soil, and return it to the sites from which you borrowed it.

Flat Rock Firelay It may seem odd to think that rocks can be damaged by fire, but heat and smoke can discolor rocks, leaving a permanent sign of your passing. If you intend to build a fire on a slab of rock, treat the stone as if it were bare ground. Lay down an insulating pad of mineral soil and keep your fire small. After you remove the firelay, wash the rock with plenty of water to rinse away every trace of soot and ash.

Winter Firelay Winter conditions present special difficulties for fire builders. Snow and ice can melt under a fire and extinguish it. Frozen ground can thaw and be damaged by heat. Stoves may be the

best answer, but if you do need an open fire, build it on a firelay made of sticks 2 or more inches in diameter and several feet long laid side by side on packed snow. When you are done, put out the fire, dismantle the firelay, and scatter charred wood over a wide area.

GATHERING FUEL

Once the firelay is in place, gather a sufficient quantity of wood. You'll need three types.

Tinder
Tinder is fine, dry material that will burst into flame at the touch of a match. Pine needles, the inner bark of dead branches, weed fluff, dry grasses, abandoned rodent nests, and shavings whittled from stick all are good sources of tinder. Gather a double handful. Store another double handful a plastic bag to keep in your pack for an emergency supply. Carefully shave few pieces of pitch that has oozed from the bark of a conifer. The pitch will flare instantly at the touch of a flame and help ignite your tinder.

Kindling
Kindling is material that will burn with a little encouragement. Twigs are the easiest to find. In damp weather you can often find dead twigs that are dry. You can also split open wet logs and cut off pencil-thick lengths of the dry inner wood. You'll need a small armload.

Fuel
Fuel is the firewood you'll use to keep your blaze burning. Since you'll want to keep the fire small, you can usually gather all you need without having to use axes and saws. Dry branches lying on the ground are a fine source of fuel. Stack your firewood neatly near the firelay and, if bad weather threatens, protect it with a sheet of plastic or a dining fly.
Every camper has favorites when it comes to kinds of firewood. Hardwoods such as oak, maple, hickory, ash, and apple will burn a long time and make a hot, even bed of coals. Pine, spruce, fir, and other softwoods burn quickly, produce lots of fast heat, and throw off a good deal of smoke and sparks. As a general rule, the heavier a piece of wood, the longer it will burn and the more coals it will produce.
Occasionally, you may find it necessary to fuel your fire with charcoal you've carried to the site. Handle it the same as wood: prepare a firelay, use tinder and kindling to ignite the charcoal, and properly dispose of ashes and unburned briquettes.

STARTING A FIRE

Loosely arrange your tinder and a handful of kindling in the center of your firelay. Light the tinder and, as it begins to burn, add kindling one piece at a time, taking care not to smother the flames. When the kindling is burning brightly add larger pieces of fuel wood. Keep an eye on the fire as long as it is burning; never leave it unattended. That's really all there is to starting a fire, though there are dozens of ways to add tinder, kindling, and fuel. Here are two.

Teepee Arrange several pieces of kindling over the tinder in the shape of a teepee. Add larger pieces of fuel as the flames rise. When a good supply of glowing coals can be seen, use a stick to collapse the burning teepee and push the embers into a compact bed.

Lean-to Push a small stick at a 45 degree angle into the firelay, the upper end of the stick pointing into the wind. Place tinder beneath the stick, light it, and lean kindling against both sides of the stick. When the kindling is burning well, lean sticks of fuel against it. Air blowing into the lean-to will keep the flames growing.

EXTINGUISHING FIRES

The most important part of tending a campfire is what happens to it when you've finished using it. If you properly extinguish the flames and dispose of the ashes and firelay, you can leave the area certain you've done nothing to harm the land.

Put out a fire by sprinkling it with plenty of water, stirring the embers to moisten them thoroughly Don't stop until the remains of your fire pass the cold-out test, which means you can safely run your hand through the extinguished coals and ashes.

After the fire is dead out, crush the ashes, mix them with the mineral soil of the firelay, and return the soil to the pit from which it was borrowed. In established, frequently used campsites, you can leave a neat pile of firewood for the next campers to use, but everywhere else you'll want to scatter your extra firewood over a wide area to help remove every signof your camp.

Finally, replace any ground cover you disturbed, and do whatever else you can to return the fire site to the condition in which you found it.

A FINAL WORD

The ability to generate heat can enrich your outings, but with fire comes ie responsibility to use it wisely Do your part by carrying a camping stove on all your camping trips and using it whenever an open fire might harm the environment. You'll have the convenience of a stove when you need it, the pleasure of an open fire when you want it, and the satisfaction of always camping cleanly, responsibly, and well.

This is Chapter 10 of the BSA Field Book:

Outdoor Safety

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An injury that doesn't happen needs no treatment. An emergency that doesn't occur requires no response. An illness that doesn't develop demands no remedy. Obviously, the best way to stay safe in the outdoors is not to get into trouble in the first place. That requires planning, leadership, and good judgement. As long as you keep your wits about you and clearly consider the consequences of your actions, you'll be able to enjoy even the most remote wilderness areas safely.

Veteran mountain climbers have a saying: "Mountains don't care." What they mean is that the mountains won't look after the safety of those who climb their flanks. But mountains aren't hostile, either. Like rivers, lakes, prairies, beaches, deserts, and your own front yard, they are simply masses of rock, soil, water, and vegetation acted upon by the forces of gravity, precipitation, and weather. They don't willingly cause accidents to happen any more than a roller skate on a step willingly causes someone to fall. The responsibility for your safety, whether you are at home or in the backcountry, rests squarely on your shoulders.

And yet, while concern about safety is important, it needn't become such a worry that it detracts from your enjoyment of a trek. Just as you automatically step around the roller skate on the stairs and then move it out of the way so no one else will fall, you can make outdoor safety awareness a habit.

Preparation

The preparations you make before a trek can do a lot to ensure your safety in the backcountry. Thorough planning means you'll have all the clothing, camping equipment, provisions, and survival gear you'll need. You will have thought through the route you intend to follow, checked weather forecasts, practiced any special skills the outing will demand, and left a complete trip plan with responsible people who will search for you if you are overdue in returning home. Since your chances of getting into difficulties are greatly reduced when you travel with others, you will have at least four people in your group. In short, you'll have done everything you can to foresee and avoid problems before they can occur.

GENERAL SAFETY CONSIDERATIONS

On the Trail

Much of the backcountry is accessible only by trails, and even activities like boating, mountaineering, and caving may require that you spend part of your time portaging or hiking. Accidents are more likely to occur when you are weary, so set a pace that everyone in your group can manage, and plan your itinerary so you won't have to travel after dark. Keeping the group together will make it easier for you to share the pleasures of the trip and to warn one another of holes in the trail, loose rocks, and low-hanging branches. Use the buddy system while on the trail.

In Camp

You can avoid most camp dangers by choosing your sites carefully. An area with good natural drainage, away from the targets of lightning or the paths of flash floods, sheltered from the wind, and free of dead trees or snags that could fall during a storm is ideal.

The activities you've planned for a trek should make you pleasantly tired by the time you get to camp, though you may want to designate areas away from the campsite for games. That way you'll have a good place to let off excess energy without the danger of tripping over guy lines, firewood, and equipment. Keep the camp tidy and use good sense in handling axes, saws, and knives, and in lighting and maintaining stoves and open fires. Proper storage of food will protect your provisions from insects and animals, and in bear country it will let you get an uninterrupted night's sleep.

SPECIAL SAFETY CONSIDERATIONS

Backcountry conditions pose challenges you'll need to be prepared to meet. While some are present at any time of the year, most can be divided into categories determined by the kind of weather during which they most often occur.

COLD-WEATHER SAFETY

Winter adventure can be exciting, and as long as you are prepared to keep yourself warm, you'll be fine. Layers of wool and insulated clothing, snug shelters, and plenty of high energy food will help you generate and conserve body heat a nd fight off the major dangers of cold weather — hypothermia and frostbite.

Hypothermia

When a person's body temperature drops too low, the body will no longer be able to warm itself. In effect, the body's furnace has gone out. Conditions need to be extreme for hypothermia to develop. Any combination of cool weather, damp clothing, and wind can bring it on. In fact, most cases occur when air temperature is well above freezing. In wet, cool weather, do all you can to keep yourself and your clothing dry, and prevent the loss of heat through your head by pulling on a warm cap. Keep an eye on your companions and watch for any sign that they are becoming too chilly. Shivering, poor coordination, a slow pace, irritability, slurred speech, fatigue, and questionable judgement are all signs of the onset of hypothermia, which, if untreated, can lead to stupor, collapse, and even death. If symptoms do appear, get yourselves warm, dry, and fed as soon as you can.

Frostbite

Flesh exposed to low temperatures is in danger of freezing and the longer the exposures the more damaging the injury. Since they are far from the body's core, toes, and fingers are especially susceptible to frost nip, and so are noses, ears, and cheeks. Prevent frost nip and frostbite in cold weather by keeping your skin covered. Mittens will insulate your hands better than gloves. Your boots and the straps of snowshoes and crampons should not bind so tightly that they slow the circulation of blood in your feet Use a scarf and a warm knit or an insulated hat or hood to shield your head and face. As with hypothermia prevention, watch your companions. Warn them if you think they're not taking enough care to protect themselves, and be alert for the first signs of frostbite: stiffness and numbness in a part of the body, and the appearance of a greyish or whitish color on the skin.

WIND CHILL CHART

Actual Thermometer Reading	Estimated Wind Speed MPH 5	10	15	20	25	30	35	40	Danger From Freezing of Exposed Flesh
35°	32°	22°	15°	11°	7°	5°	3°	2°	Some danger to exposed flesh
30°	27°	16°	9°	4°	0°	-2°	-4°	-6°	
25°	21°	10°	2°	-3°	-7°	-10°	-12°	-14°	
20°	16°	4°	-5°	-10°	-15°	-18°	-20°	-21°	
15°	11°	-2°	-11°	-17°	-22°	-25°	-27°	-29°	Increasing danger to exposed flesh
10°	6°	-9°	-18°	-25°	-29°	-33°	-35°	-37°	
5°	0°	-15°	-27°	-32°	-36°	-40°	-42°	-45°	
0°	-5°	-21°	-36°	-39°	-44°	-48°	-49°	-53°	
-5°	-10°	-27°	-40°	-46°	-51°	-55°	-58°	-61°	
-10°	-15°	-33°	-45°	-53°	-59°	-63°	-67°	-69°	
-15°	-20°	-39°	-52°	-60°	-66°	-71°	-74°	-77°	Great danger to exposed flesh
-20°	-26°	-46°	-58°	-67°	-74°	-79°	-82°	-85°	
-25°	-31°	-52°	-65°	-75°	-81°	-87°	-90°	-93°	
-30°	-36°	-58°	-72°	-82°	-88°	-94°	-98°	-100°	

Thin Ice
When the ice on a lake or stream is thick, you can use it a pathway to territory you can't reach in the summer, and as a playground for skating, skiing, and sledding. However, you'll want to be sure its safe before you venture onto it, and this old chant about thickness of ice is a good general guide:

1 inch	**No way**
2 inches	**One may**
3 inches	**Small groups**
4 inches	**OK!**

The thickness of ice can vary from one part of a body of water to another. It's usually thickest near the shore and thinnest where the water underneath is moving, especially close to springs and the inlets and outlets of lakes. When you have any doubts about the safety of ice, stay on shore. If you feel the ice underneath you giving away, try to get to safety before it breaks. Should someone fall through, throw a rope, reach with a pole, a ski, a branch, or the sleeve of a jacket; or, as a last resort, form a human chain by grasping the wrist of the person ahead of and behind you and then, lying on the ice to distribute your weight, ease out toward your struggling companion. Once ashore, immediately treat the victim for hypothermia.

Carbon Monoxide Poisoning
Odorless and colorless, carbon monoxide is produced during the incomplete burning of wood, coal, charcoal, stove gases, or any other fuel containing carbon. In the open, there is sufficient ventilation to disperse the carbon monoxide produced by a flame before it can create a danger, but a person exposed to carbon monoxide in the confines of a shelter such as a tent, cabin, snow cave, or vehicle may suffer headaches, dizziness, and drowsiness. Extended exposure to the gas can bring on nausea, vomiting, and heart irregularities. Unconsciousness and death may follow.

Preventing carbon monoxide poisoning is simple-keep fires and glowing coals out of enclosed spaces. Do your cooking in the open, and no matter how cold the weather outside, avoid the temptation to bring a fire or heater into your shelter.

HOT-WEATHER SAFETY

When the weather is hot, your body will do it all it can to keep itself cool, but if it overheats you can suffer from a number of illnesses including heat exhaustion, sunstroke, dehydration, and sunburn. Avoid these difficulties by preparing yourself for hot weather just as carefully as you do for cold conditions. Regularly drink plenty of liquids to replenish moisture lost through sweat and respiration. Reduce your activities during the heat of the day, staying in the shade and taking it easy, and limiting strenuous events to the cool of the evening and early morning. Wear loose, light-colored clothing that protects your skin from sunburn, and use sunglasses to shield your eyes. Heavy perspiring can deplete your body's minerals, and you may find you feel better if you increase the amount of salt you normally use on your food. However, it's better not to take salt tablets, which may upset your stomach.

WET-WEATHER SAFETY

Staying dry and cheerful during a stretch of rain is a challenge for anyone, yet wet-weather brings a strange, misty beauty to the backcountry, and the drum of rain on a tent at night is one of the nicest sounds in camping. However, wet conditions also bring with them a few hazards and you'll want to be ready to meet them.

Lightning
You won't soon forget the sight of a lightning bolt splitting the mountain sky, or the sound of thunder bouncing off canyon walls. Lightning is as dangerous as it is spectacular, but you can keep yourself safe by knowing when and where it is most likely to strike.

Any time a backcountry storm moves toward you, you think about lightning. You may see the clouds coming, you may feel a sudden rush of cold air as the leading edge of a storm front passes overhead, or you may smell ozone in the air as the atmosphere becomes electrically charged. Whatever the signals, take shelter immediately. Lightning tends to hit the highest point in an area, though ground currents may run through fissures in rocks, down wet ropes and damp cracks, and along surface of the earth. Descend from mountain summits and ridges on the leeward side, get off open water, and stay away from pinnacles and solitary trees. You'll be relatively safe among the shorter trees of a forest, but if a storm moves in too quickly for you to find shelter, drop your pack, remove metal objects from your pockets and belt, and crouch between two boulders or in a dry depression. Insulate yourself from the ground by kneeling on your rolled sleeping bag, a foam pad, or a coiled rope.

Flooding
Choose a campsite carefully so rainwater will drain away from your tents rather than running under them. A dry gully may channel a flash flood several miles-a good reason never to camp in one.

Rainy Weather

Wet conditions can make trails and campsites slippery, so you'll want to be especially cautious as you move from place to place. Staying dry is always important, but with good rain gear to wear, a tight tent for shelter, and some plastic trash can liners to protect your gear, you can stay comfortable. Secure your camp before a storm hits, checking tent stakes, stowing equipment, and lowering the windward sides of dinning flies. During a long stormy siege you might have to spend lots of time in a tent, and you may need to make a special effort to keep your spirits high. An interesting book, a small chessboard, or a journal can keep you busy for hours, and so can storytelling, singing, and sleeping. Having a good time is often a matter of how you look at **it,** and if you can see wet weather as a special feature of the backcountry, you'll find much about it to enjoy.

DRY WEATHER SAFETY

Extremely dry weather presents two dangers- dehydration and the increased likelihood of forest and grass fires. You can avoid the first by drinking plenty of water and reducing your level of exertion to slow moisture loss through perspiration. Protect your lips with a coating of lip balm, moisturize your skin with lotion, and if the weather is hot, be alert for the symptoms of heatstroke and heat exhaustion. You can lessen the dangers of wild fires by planning meals that need do cooking, or by cooking over a backcountry stove. Don't light an open fire if there is any chance the sparks will ignite nearby brush, trees, or ground cover.

SAFE WATER

The safest water to use on an outing is that which you carry from home. Always start out with a full water bottle, and when you can replenish your supply from tested public systems, do so.

On adventures of long duration, streams, lakes, springs and snowfields all are potential sources of water, but be sure to purify all water you can get in the wild, no matter how clean it appears to be. Bacteria can thrive in untreated water, and the parasite *Giardia lamblia,* which can cause diarrhea, nausea, and vomiting, thrives in many wilderness lakes and streams.

The surest method of making your water safe is to bring it to a boil, then let it cool. At higher elevation, boil it for several minutes to kill micro organisms because the boiling temperature of water will be lower. IF the water is muddy, allow it to stand awhile in a cook pot and the silt will settle to the bottom. Dip the clear water off the top and purify it by boiling. Organic debris can be removed by straining water through a clean bandana.

Available at drug stores, water purification tablets will kill most waterborne bacteria, but they aren't very effective against *Giardia lamblia.* The tablets contain iodine, halazone, or chlorine. Over time they gradually lose their potency, so keep your supply fresh. You may also want to investigate the compact filtering devices now available for backcountry use.

SAFETY AROUND ANIMALS

Animals often will be an exciting part of your adventure. Seeing them in their natural habitats is almost always a pleasure, but it's wise to remember that they are the permanent residents of the backcountry while you are a visitor. Treat them with dignity, give them enough space so they'll not feel threatened by your presence, and they'll seldom present a threat to your safety. However, when an animal feels frightened, threatened, or trapped, it may fight for its life by squirming, biting, and scratching. In the event you are injured by a warm-blooded animal, seek treatment quickly, for a doctor must determine whether rabies treatments will be necessary.

Snakes are beneficial members of the animal community, and they normally shun humans. Even in areas with a large snake population, a hiker may walk for days without seeing one. Still, a snake will bite if it is startled or cornered, so take precautions to prevent that from happening. A you hike and camp, watch where you put your feet and hands, Avoid thick brush, and when you're climbing, don't reach blindly over a ledge.

When you camp in bear country, protect your camp by keeping your cooking area clean, hanging all your food and "smellables" in a bear bag, and properly disposing of garbage. Fresh bear droppings on a trail should cause you to be alert for the bears themselves. Like other animals, they usually avoid humans whenever they can, though a bear that is startled or has cubs can be quite dangerous. Whistle, sing, shake a few pebbles in a can, or hang a bell from your pack as you walk through the territory inhabited by bears, and they'll give you plenty of leeway.

Include a good insect repellent in your camping and hiking gear to ward off the attacks of mosquitoes, black flies, and 'no-see-urn's". Repellents containing the chemical N, N-Diethyl-meta-toluamide (also known as DEET) are especially effective. In many parts of the country, you'll want to check your body, hair, and clothing daily for ticks. Wherever bugs are a nuisance, you can keep them at bay by tucking the cuffs of your pants into your socks, buttoning your sleeves and collar, and keeping your shirttail tacked in. Adding a mesh head net and canvas or cotton gloves will give you almost total protection. However, if you know you may have a severe allergic reaction to insect stings, be sure you consult your doctor to learn what to do if you are stung. You may need to carry an emergency treatment kit. Let your companions know what to do should you need their help.

SAFETY AROUND PLANTS

Like animals, vegetation greatly enriches outdoor experiences. Hazardous plants will seldom cause concern for most backcountry travelers, though you will want to be able to recognize irritants such as poison ivy, poison oak, poison sumac, and nettles. When you are with experienced campers who know which plants can spice up a stew and which will make a tasty salad, you can learn plenty about safely selecting and preparing edible vegetation. However, do not eat any wild plants, including mushrooms, unless you are positive you know what they are and that they are safe for human consumption.

WHEN TO STOP TO TURN BACK

When lightning crackles across the sky, the rocks around you begin to buzz with electricity, and the smell of ozone is heavy in the air, you don't need to be told it's time to abandon your immediate plans to reach a mountain's peak. When you discover that the bridge your trail should have crossed was washed away by a raging torrent, or that a bear has eaten all your food you'd intended to eat for the next 4 days, or that 3 feet of snow has fallen on the pass over which you'd intended to hike, you probably won't have any trouble sitting down and reconsidering your itinerary.

When borderline dangers arise, however the decision may not be so easy. Perhaps you've become exhausted. Maybe that mountain you're climbing is a tougher challenge than you are ready for. A river may be more turbulent than you had expected. The weather may be turning bad. A companion might be feeling ill, or you may simply be having a miserable time. Should you push on despite the growing adversity? Should you devise a new plan? Should you terminate the adventure altogether

and just go home? A mark of wise wilderness travelers is their willingness to stop or turn back if an adventure becomes hazardous, since they know that such a decision can spell the difference between a safe and satisfying outing and a foolhardy flirtation with disaster.

As you're planning an adventure, talk with yopr companions about situations that might cause you to change or terminate your trip, and don't head for the hills until you agree that you all are willing to stop anytime backcountry hazards develop, and you will not be afraid of deciding to alter your activities for the sake of everyone's safety and happiness.

Dangerous situations can develop slowly or quickly, and from just about any source. The fact that they often are unexpected is part of what makes them dangerous. Among the most common are these.

Bad Weather
Weather is the outdoor condition that can vary the most, and thus it can have great effects on your safety. Wind can shred a dining fly, whip waves over a canoe, or make bicycle riding all but impossible. Lightning can drive you off lakes and rivers, and down from mountains. Rain and chilly temperatures bring with them the potential for hypothermia. If you can't keep your clothing and equipment dry and yourself warm and safe, it's time to retreat to an area where you can.

Difficult Terrain
As you plan a trip, you'll find out all you can about the terrain you expect to encounter, but what you see on a map at home and what you see when you're on the trail may differ considerably. The climbs may be steeper and longer than you had anticipated. The trail tread may be rocky or overgrown with brash. You may be tempted to push on, hoping the terrain will ease before long, but to do so invites exhaustion. Don't look in the bright side, look on the realistic side. If the terrain is ragged, shorten the distance you intend to cover each day, choose an alternate trail, or turn back.

Fatigue
Outdoor activities often require quick coordination and sharp thinking. You have neither when you are overly tired, and that increases your susceptibility to injury and illness. Stop when you become weary and refresh yourself with food, relaxation, and sleep.

Darkness
Late afternoon is a time you'll want to be particularly alert to the dangers of overextending your energies. You and your companions probably will be tired from the day's exertions, and if your intended campsite is still several miles away, you may be tempted to rash to reach it before dark. A kayaker might want to try squeezing in one more set of rapids before dusk, while a climber might like to ascend a last pitch or two before going home. Before you press on, though, determine if you have plenty of time before sunset to complete the activity you're planning, and also to take care of tasks such as making camp and cooking supper, getting ashore and portaging to a road, or rappelling down to the base of a cliff. If not, stop now. The distant camp, the river rapids, and the unclimbed pitch will still be there in the morning.

Rough Water
A boater drifting into water too rough to handle is in trouble. A hiker trying to wade a stream that is too swift and deep may be in for a quick, cold dunking. Use good sense around water, especially cold water, traveling on it or crossing it only when you are sure you can do it safely.

Insufficient Time
An ideal trip plan will include plenty of time for every activity, plus s few hours of leeway in case a crew falls behind schedule or finds additional things to see and do along the way. However, once you've filed a trip plan and noted when you expect to come home, allow ample time to return on schedule. If that means omitting some of your planned activities, then do it. Allow time to meet your deadline without taking risks or becoming exhausted.

Inadequate Food

A group enjoying an outdoor adventure will burn uplots of calories and they'll need plenty of food to replenish their energies. Going without food is not only uncomfortable, it can also impair a crew's ability to hike, make camp, and keep warm. If your provisions run low, it's time to go home.

Low Morale
When trip goals are not accomplished, when poor judgement of distances and time leads to exhausting, and when clothing and equipment do not keep a crew warm and dry, morale can collapse. The outdoors is for enjoyment, not for suffering and unhappiness. Rectify the situation if you can, but if not, consider abandoning the trek and trying again after conditions improve.

Web Sites for information on Camp equipment

•Solo and backpacking tents
www.rei.com
www.mgear.com
www.kelty.com
www.mosstents.com
www.dannadesign.com
www.campmor.com
www.biblertents.com

•Tarps
www.rei.com
www.moutainhardwear.com
www.walrusgear.com
www.golite.com
www.campmor.com
www.mpioutdoors.com
www.wyeastfabrics.com

•Insulating pads

www.thermarest.com
www.mountainhardware.com
www.adventuresport.com

•Sleeping bags

www.llbean.com
www.rei.com
www.slumberjack.com

www.emsonline.com
www.campmor.com
www.orgear.com

•Hammocks

www.rei.com
www.hangouts.com
www.terrelogic.com
www.lawsonhammockco.com

•Two- and four-person tents for three seasons

www.eureka.com
www.outbound.com
www.thenorthface.com
www.sierradesign.com
www.biblertents.com
www.mosstents.com
www.mountainhardware.com
www.walrus.com
www.rei.com
www.campmor.com

•Low-cost camping supplies
•
www.campmor.com
www.walmart.com
www.target.com
www.kmart.com

Resources and references

The Boy Scout Handbook from BSA

Camping Merit Badge Book from BSA

Fieldbook from BSA

Backpacker Magazine

Walking Softly in the Wilderness, by John Hart. Sierra Club Books, San Francisco, 1998 ISBN 0-87156-392-4

The Complete Walker III, by Colin Fletcher. Alfred A Knopf, 1999. ISBN 0-394-72264-7

Backpacker's Making Camp. A Complete Guide for Hikers, Mountain Bikers, Paddlers & Skiers, by Steve Howe, Alan Kesselheim, Dennis Coello, John Harlin. The Mounteneers, Seattle, WA. 1997. ISBN 0-89886-522-0

These are excerpts (Chapters III and VII) of the BSA Guide to Safe Scouting:
Note: Bold type denotes BSA rules and policies.

Guide to Safe Scouting

1999 Edition

With Updates through April, 2000

A Unit Leader's Guide
For Current Policies and Procedures
to Safe Activities

BOY SCOUTS OF AMERICA

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(c) 1998 Boy Scouts of America
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Age Guidelines

- Overnight camping by second- and third-grade Cub Scout dens or Cub Scout packs (other than at an approved local council resident camping facility operated by the local council) is not approved, and certificates of liability will not be provided by the Boy Scouts of America.
- Cub Scouts (second and third graders) and Webelos Scouts (fourth and fifth graders) may participate in a resident overnight camping program covering at least two nights and operating un-der certified leadership in an estab-lished Scout camp operated by the council during the normal camping season.

A Webelos Scout may participate in overnight den camping when supervised by his mother or father. If a parent cannot attend, arrangements must be made by the boy's family for another youth's parent (but not the Webelos leader) or another adult relative or friend to be a substitute at the campout. No parent should be responsible for more than one boy other than his or her own.

It is essential that each Webelos Scout be under the supervision of an adult. Joint Webelos den-troop campouts are encouraged for dens of fifth-grade Webelos Scouts with their parents to strengthen ties between the pack and troop. Den leaders, pack leaders, and parents are expected to accompany the boys on approved trips.

Tiger Cubs are limited to boy-parent excursions or program-managed family camping designed for the entire family.

Family camping: an outdoor camping experience, other than resident camping, that involves Cub Scouting, Boy Scouting, or Exploring program elements in overnight settings with two or more family members, including at least one BSA member of that family. (Youth Protection guidelines apply.)

Family Camping

Family camping: an outdoor camping experience, other than resident camping that involves Cub Scouting, Boy Scouting or Venturing program elements in overnight settings with two or more family members including at least one BSA member of that family. Parents are responsible for the supervision of their children, and Youth Protection guidelines apply.

Recreational family camping

Recreational family camping: when Scouting families camp as a family unit outside of an organized program. It is a nonstructured camping experience, but is conducted within a Scouting framework on local council-owned or -managed property. Local councils may have family camping grounds available for rental at reasonable rates. Other resources may include equipment, information, and training.

Program-managed family camping

The local council or unit provides of the elements of the outdoor experience on one or more days, with major program areas staffed. Many times this includes food service, housing, and complete program schedule. Cub Scout unit family programs must have local council approval. These events must be held on council owned or -managed property or,

at the local council's option, in council-approved city, county, state, or federal parks.

Model A: typically a weekend experience for the Scout member and an adult member of his family. Examples: dad-and-lad, mom-and-me, and parent-and-pal.

Model B: an outdoor experience of one or more days at a set BSA-owned or –managed camping location where the Scout's entire family is encouraged to participate.

- **All Scouts registered in Boy Scout troops are eligible to participate in troop or patrol overnight campouts, camporees, and resident camps.**
- **Boy Scouts and Varsity Scouts 12 through 17 are eligible to participate in national jamborees. Boy Scouts and Varsity Scouts 13 through 17 are also eligible to participate in world jamborees and high-adventure programs.**
- **All youth registered in Venturing are eligible to participate in crew, district, council, and national Venturing activities. Venturers are eligible to participate in national high-adventure programs, and on a limited basis, world jamborees. Venturers are eligible to participate in Boy Scout Resident Camp if registered and attending with a troo**p.

If a well-meaning leader brings along a child who does not meet these age guidelines, disservice is done to the unit because of distractions often caused by younger children. A disservice is done to the child, who is not trained to participate in such an activity and who, as a nonmember of the group, may be ignored by the older campers.

Wilderness Camping

Anything can happen in the wild out-doors, and you should take measures de-signed to pre-vent accidents and injuries from occurring. Ask the question: "What would happen if _____ occurred?" Once you have identified possible problems, devise a plan to minimize the risks and to manage a crisis if one occurs. Involve the entire crew in this process so that everyone becomes aware of potential dangers and how to avoid them.

Obviously, the best way to stay safe in the wilderness is to not get into trouble in the first place. This requires planning, leadership, and good judgment. To help be prepared for the challenges of a wilderness trek and camping experience, read Passport to High Adventure, No. 4310.

Trail Safety

Alertness and care in all that is done on the trail and performing within the group's known capabilities are among the best preventive measures against accidents. Most common outdoor injuries are blisters, cuts, sprains, strains, bruises, and fractures. Hikers also may become lost or get caught in storms, and they often panic as a result. Avoidable tragedies may occur if campers and leaders lack the skills and knowledge to deal with the problems encountered. Leaders must alert their young people to the dangers of unusual environment with proper instructions on fire safety, orienteering, and safe travel.

Leaders must instruct those in their groups to stay together on well-established trails, avoid loose rocks (especially on descent), and avoid dangerous ledges, cliffs, and areas where a fall might occur. Accidents can occur when hikers kick and roll boulders down steep hills. Wilderness trails have no caution signs for loose rocks, nor do they have guard rails on cliffs.

It is strongly recommended that at least one person in the group be currently certified in first aid through the American Red Cross or any recognized agency.

Trail safety is a matter of common sense. The response of individual members of a group in doing the right thing is important. When they understand the reason

for rules of safety, they obey them more willingly.

The Boy Scouts of America has an abundance of literature related to proper procedures and guidelines for a group on a trail.

References: Boy Scout Handbook; Backpacking, Camping, and Hiking merit badge pamphlets; Cub Scout Leader Book; Scoutmaster Handbook; Fieldbook

Beware of Lightning

The summits of mountains, crests of ridges, slopes above timberline, and large meadows are extremely hazardous places to be during lightning storms. If you are caught in such an exposed place, quickly descend to a lower elevation, away from the direction of the approaching storm, and squat down, keeping your head low. A dense forest located in a depression provides the best protection. Avoid taking shelter under isolated trees or trees much taller than adjacent trees. Stay away from water, metal objects, and other substances that will conduct electricity long distances.

By squatting with your feet close together, you have minimal contact with the ground, thus reducing danger from ground currents. If the threat of lightning strikes is great, your group should not huddle together but spread out at least 15 feet apart. If one member of your group is jolted, the rest of you can tend to him. Whenever lightning is nearby, take off backpacks with either external or internal metal frames. In tents, stay at least a few inches from metal tent poles.

Lightning Safety Rules

- Stay away from open doors and windows. fireplaces, radiators, stoves, metal pipes. sinks, and plug-in electrical appliances.
- Don't use hair dryers, electric toothbrushes. or electric razors.
- Don't use the telephone; lightning may strike telephone wires outside.
- Don't take laundry off the clothesline.
- Don't work on fences, telephone lines, power lines, pipelines, or structural steel fabrications.
- Don't handle flammable materials in open containers.
- Don't use metal objects such as fishing rods and golf clubs. Golfers wearing cleated shoes are particularly good lightning rods.
- Stop tractor work, especially when the tractor is pulling metal equipment, and dismount. Tractors and other implements in metallic contact with the ground are often struck by lightning.
- Get out of the water and off small boats.
- Stay in the car if you are traveling. Automobiles offer excellent lightning protection.
- When no shelter is available, avoid the highest object in the area. If only isolated trees are nearby, the best protection is to crouch in the open, keeping twice as far away from isolated trees as the trees are high.
- Avoid hilltops, open spaces, wire fences, metal clotheslines, exposed sheds, and any electrically conducted elevated objects.

Pure Drinking Water

A constant supply of pure drinking water is essential. Serious illness can result from drinking unpurified water. Protect your health. Don't take a chance on using water that you are not sure of Thermos jugs, plastic water containers, and canteens are all satisfactory for carrying water. Be sure water is dispensed into each per-son's own drinking cup.

Treatment of Questionable Water

In addition to having a bad odor or taste, water from questionable sources may be contaminated by microorganisms, such as Giardia, that can cause a variety of diseases. All water of uncertain purity should

be purified before use. Don't take a chance on using water that you are not sure of. To purify water, follow these steps:

1. Filter the water to remove as many solids as possible.
2. Bring it to a rolling boil and boil it for a full minute.
3. Let it cool at least 30 minutes.
4. Add eight drops of liquid chlorine bleach per gallon of cool water. (Use common household bleach; 5.25 percent sodium hypochlorite should be the only active ingredient; there should not be any added soap or fragrances Water must be cool or chlorine will dissipate and be rendered useless.
5. Let the water stand 30 minutes.
6. If it smells of chlorine, you can use it. If it does not smell of chlorine, add eight more drops of bleach and let it stand another 30 minutes. Smell it again. You can use it if it smells of chlorine. If it doesn't, discard it an find another water source.
7. The only accepted measurement of chlorine (or water treatment agents) is the drop. A drop is specifically measurable. Other measures such as "capful" or "scant teaspoon" are not uniformly measurable and should not be used.

In addition to common household bleach, several other types of chemical means to disinfect water are available, such as iodine tables, iodide crystals, and halazone tablets. All of the are acceptable, but some people have an allergic reaction to iodine products. Follow the instructions on the package for proper use.

To treat cold water you must lengthen the contact (sitting) time depending on the water temperature to destroy Giardia that may be present. Very cold water may take as long as four times the normal contact time.

Several types of water purification filters available at camp stores. The Boy Scouts of America recommends that if you use a water filter, you also chemically treat and/or boil the water and carry extra filter cartridges and spare parts. Among the best water filters are PUR, MSR, Katadyn, First Need, and Sweet Water.

BSA Property Smart

Cub Scouts, Boy Scouts, and Venturers are often privileged to use the land and property of others for hiking, camping, and other activities This privilege carries important responsibilities regarding care, courtesy and cleanliness.

Carelessness is regrettable and must be avoided at all times. On the other hand, deliberate vandalism is a criminal act and is forbidden. Every Scout and Scouter has an obligation to do his or her best to care for and protect every property that he or she visits.

All youth and leaders should follow these guidelines:

1. Every group that plans to use a site must obtain permission from the owner before entering the land. The best plan is for one or two of the leaders to visit the owner several weeks before the trip to get permission; if this is not possible, the owner should be contacted by letter or telephone. If there is any uncertainty about permission (for instance, permission has been granted in the past, but you received no response to your recent request), check in when you arrive for the trip. In this case, one or two members of the group should find the owner while other members wait. Don't assume that permission is automatic and begin unloading equipment. If you find that the owner is not available and you don't have prior permission, you must go elsewhere.

2. Many camp and activity sites, such as those found in state parks, national forests, and national parks, are owned by government entities or municipalities. Many of these have strict access policies and/or permits that need to be secured in advance. Be sure to follow the rules, which can be explained by a property official or ranger.

3. Ask where it will be convenient to park cars. Don't block traffic lanes and driveways.
4. Never write, mark, or paint on walls, ceilings, rocks, or structures. Occasionally, it may be necessary to mark a confusing trail or road. For this purpose, carry small signs with arrows drawn on them. Place the markers in suitable locations as the group enters, and collect them on the way out. Don't cut live branches or trees.
5. You might need to cross someone's property to reach a campsite or activity area. Obtain permission to do so, and remember that a landowner's income might depend on his or her crops and livestock. Don't climb fences that might break under your weight. Always leave gates exactly as you found them. Open gates can result in extensive loss to the owner.
6. Don't tease or chase livestock. Take special care not to startle flocks of poultry. Disregard for the owner's animals can result in injury to you and/orthe animals.
7. Be conscious of any actions that will disturb or inconvenience the owner. Keep noise to a minimum, especially late at night. Pick up trash, even that left by previous visitors. Don't build a fire except in cleared fire sites and with the owner's permission. It's best to use a backpacking stove. Fires must be completely out before you leave the area.
8. Don't leave behind any trace of your visit. Leave every natural thing and manmade structure exactly as it was before you entered, and remove everything you brought to the site. Put trash in suitable containers, such as plastic bags, and then take all trash home; never dump it on the ground.
9. If it is not too late at night, stop as you leave to tell the owner that you are leaving. If it is late, write a note. Remember that the owner's schedule might not be the same as yours. If the home is dark, regardless of the hour, don't disturb the owner. In either case, thank the owner when you leave. Send a follow-up letter that includes, if possible, pictures taken in the area.
10. When obtaining permission to enter a property, never underestimate the length of time you might spend there. If you specify an exit time to the owner, leave at that time. You can plan longer trips for the future. Missing an exit time could cause unnecessary concern or inconvenience for the owner.
11. When planning camps and activities, don't frequent the same well-known sites. Heavy traffic causes damage and puts a strain on owner relations (commercial or public sites excepted). In the backcountry, limit camping at one location to no more than three days tohelp preserve the natural environment.
12. All Cub Scouts, Boy Scouts, Venturers, and leaders should demonstrate their interest in the property of others and their appreciation by participating in or organizing an occasional cleanup to remove trash and repair damage left by thoughtless visitors, as well as to remove writing on walls and rocks. With the owner's permission, you might even carry out conservation projects such as erosion control or wildlife habitat improvement. This makes an excellent group project and teaches conservation of and respect for the natural environment and property of others.

Often, people forget that camps, trails, and activity sites belong to the landowner and that they must depend on his or her goodwill. In recent years, use of natural areas has increased tremendously. Owners of popular sites are besieged by people seeking entrance, and the result has been that many owners are becoming alienated. The rudeness and thoughtlessness of a few people can cause property owners to exclude everyone from a site.

The above rules boil down to a simple statement: Use common sense and treat owner as you would like to be treated. If outdoor activity is to continue in this country everyone must do all they can to make themselves welcome at each site they visit.

Hantavirus

Hantavirus is a deadly virus that was first recognized as a unique health hazard in 1993. Outbreaks have been principally limited to the Four Corners region of Arizona, New Mexico, Utah, and Colorado. There are four different strains of hantavirus, and cases have been reported in 26 different states. The virus is most active when the temperature is between 45ºF and 72ºF.

Hantavirus is spread through the urine and feces of infected rodents. It is an airborne virus. A person is infected by breathing in particles released into the air when infected rodents, their nests, or their droppings are disturbed. This can happen when a person is handling rodents, disturbing rodent nests or burrows, cleaning buildings where rodents have made a home, or working outdoors. The virus will die quickly when exposed to sunlight.

Symptoms of hantavirus include fever, chills, muscle aches, nausea, vomiting, diarrhea, abdominal pain, and a dry, nonproductive cough. If you suspect that someone has been infected, consult a physician immediately.

Rabies Prevention

Rabies has become increasingly prevalent in the United States in recent years, with more than 7,000 animals, most of which are wild, found to have the disease each year, according to statistics released by the Centers for Disease Control and Prevention (CDC). This viral infection is often found in bats, foxes, raccoons, and skunks. Rabies can be transmitted by warm-blooded animals, including domestic dogs and cats.

Although rabies in humans is rare in the United States, the CDC reports that more than 22,000 people in this country require vaccination each year after being exposed to rabid or potentially rabid animals. States with the highest number of reported cases include New York, New Jersey, Connecticut, New Mexico, Texas, Massachusetts, Pennsylvania, North Carolina, New Hampshire, Maryland, and parts of northern California.

Scout leaders can help prevent exposures by reminding Scouts to steer clear of wild animals and domestic animals that they don't know. If someone is scratched or bitten by a potentially rabid animal, Scout leaders should

- Wash the wound thoroughly with soap and water
- Call a doctor or a hospital emergency room
- Get a description of the animal
- Notify local animal control office,
- police department, or board of health.

Chemical Fuels

Knowledgeable adult supervision must be provided when Scouts are involved in the storage of chemical fuels, the handling of chemical fuels in the filling of stoves or lanterns, or the lighting of chemical fuels. The use of liquid fuels for starting any type of fire is prohibited.

Guidelines for Safely Using Chemical Stoves and Lanterns

1. Use compressed- or liquid-gas stoves or lanterns only with knowledgeable adult supervision and in Scout facilities only where and when permitted.

2. Operate and maintain according to manufacturer's instructions included with the stove or lantern.

3. Both gasoline and kerosene shall be kept in well-marked, approved containers (never in a glass container) and stored in a ventilated, locked box at a safe distance (a minimum of 20 feet) from buildings and tents. Keep all chemical fuel containers away from hot stoves and campfires, and store below 100 degrees F.

4. Let hot stoves and lanterns cool before changing cylinders of compressed gases or refilling from bottles of liquid gas.

5. Refill liquid-gas stoves and lanterns a safe distance from any flames, including other stoves, campfires, and personal smoking substances. A commercial camp stove fuel should be used for safety and performance. Pour through a filter funnel. Recap both the device and the fuel container before igniting.

6. **Never fuel a stove, heater, or lantern inside a cabin; always do this outdoors. Do not operate a stove or lantern in an unventilated structure. Provide at least two ventilation openings, one high and one low, to provide oxygen and exhaust for lethal gases. Never fuel, ignite, or operate a stove, heater, or lantern in a tent.**

7. Place the stove on a level, secure surface before operating. On snow, place insulated support under the stove to prevent melting and tipping.

8. Periodically check fittings on compressed-gas stoves and on pressurized liquid-gas stoves for leakage, using soap solution before lighting.

9. To avoid possible fires, locate gas tanks, stoves, etc., below any tents since heavy leaking gas will flow down-hill the same as water.

10. When lighting a stove, keep fuel bottles and extra canisters well away. Do not hover over the stove when lighting it. Keep your head and body to one side. Open the stove valve quickly for two full turns and light carefully, with head, fingers, and hands to the side of the burner. Then adjust down.

11. Do not leave a lighted stove or lantern unattended.

12. Do not overload the stovetop with heavy pots or large frying pans. If pots over 2 quarts are necessary, set up a separate grill with legs to hold the pot, and place the stove under the grill.

13. Bring empty fuel containers home for disposal. Do not place in or near fires. Empty fuel containers will explode if heated and should never be put in fireplaces or with burnable trash.

Flammability Warning

No tent material is completely fire-proof. It can burn when exposed to continued, intense heat or fire. The most important safeguard is to keep flames away from canvas materials. For this reason, the following safety precautions are emphasized:

1. Only flashlights and electric lanterns are permitted in tents. **No flames in tents is a rule that must be enforced.**

2. **Never use liquid-fuel stoves, heaters, lanterns, lighted candles, matches, and other flame sources in or near tents.**
3. Do not pitch tents near an open fire.
4. Do not use flammable chemicals near tents—charcoal lighter or spray cans of paint, bug killer, or repellent.
5. Be careful when using electricity and lighting in tents.
6. Always extinguish cooking campfires promptly.
7. **Obey all fire laws, ordinances, and regulations.**

Extinguishers

If fire breaks out, it must be quickly and properly suppressed. To do this, you must know the three classes of fires and how to combat them:

Class A-Fires that involve normally combustible materials such as paper, wood, fabrics, rubber, and many plastics. These fires can be quenched with water or insulated with tri-class (ABC) chemical or foam extinguishers.

Class B-Fires that involve gasoline, oil, grease, tars, paints, lacquers, or flammable gases. The oxygen that supports
this type of fire must be cut off by tri-class (ABC), regular dry chemical, foam, or carbon dioxide (CO2) extinguishers. Water is dangerous, as it spreads the fire.

Class C-Electrical fires involving heated wire and arcing. These fires must be suppressed with tri-class (ABC) dry chemicals or C02-never water, which is a conductor.

Fires in any one class may involve materials of other classes, so more than one type of extinguisher should be available. Because of the danger of lethal fumes, carbon tetrachloride (CCl4) extinguishers must not be used. Dispose of these extinguishers as recommended by fire officials.

Extinguishers should normally be mounted near a doorway and approximately at shoulder level.

In a camp setting, the unit leader is responsible for training Scouts in fire prevention, fire detection and reporting, and fire fighting. All youth members and adult leaders should have unit fireguard plan training.

Reference: Unit Fireguard, No. 33691

Fireworks

The Boy Scouts of America prohibits the securing, use, and display of fireworks in conjunction with programs and activities except where the fireworks display is conducted under the auspices of a certified or licensed fireworks control expert.

Local councils may not authorize any group or chartered unit activity for or on behalf of its members, units, or district to sell fireworks as a fundraising or money-earning activity.